Some Anomalies OF LOCAL PUBLIC HEALTH ADMINISTRATION.

Being the Presidential Address to the Section of State Medicine and Municipal Hygiene of the Royal Institute of Public Health, on May 27th, 1925,

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THE title of this Section indicates its special concern with problems of central and local public health government; and my remarks cannot be more usefully directed, especially at the present time, than in indicating some of the long overdue reforms in our administrative machinery which are called for by the advancing complexity of our problems and by the "obsolete, cumbersome, illogical, wasteful, and unjust" character of the machinery with which public health work has to be carried out. The words in inverted commas are the description given by Mr. Neville Chamberlain, the Minister of Health, on May 13th of our present system of rating and valuation; but they are equally applicable to our machinery of local government, reform of which we may now reasonably hope will follow the imminent reform of the basis of valuation for local rates and for Imperial taxes.

CENTRAL HEALTH ADMINISTRATION.

The anomalies of central health administration have been greatly reduced by the Ministry of Health Act.* It is common knowledge, however, that anomalies of central administration remain which I am not concerned to consider in this address. Some of these anomalies are almost inherent in the unavoidable interlocking of different functions of government; and although I concur, for instance, in the urgent desire of Parliament, expressed most impressively in the passage of the Ministry of Health Bill through Parliament, and regret that this representative opinion was frustrated in the last stage of the Bill, I realise, as we all must, that both centrally and locally education authorities have an essential interest, not only in the hygiene of children, but also in their medical treatment, for the expression of which adequate opportunity must continue to be given. Similar remarks apply even more, so far as concerns the transfer of central control of the problems of factory hygiene and occupational disease to the Ministry of Health; and I content myself, as regards central organisation, with repeating the remark made in the volume already named:—

> "On balance one cannot doubt that there should eventually be a greater degree of central unification, while meanwhile friendly conferences are preventing friction, securing coöperation, and helping to obviate hiatuses in the health work common to several departments. This is an easy achievement when intensely parochial (intra-departmental) proclivities are kept in restraint."

But although the Ministry of Health does not deal centrally with all public health problems and is not concerned solely with these problems, its efficiency as a machine of public health government is hampered to the greatest extent by local causes of inefficiency in local government. This is no newly-realised fact. It has been painfully obvious to public health workers for a generation past, who have had with discouragement to ask, "How long? How long?" Hence, when, prior to the passing of the Ministry of Health Act, a pamphlet issued by the short-lived Ministry of Reconstruction made the following statements it was merely echoing this skilled knowledge.

> "Escape from the present impasse depends upon the general reform of the system of local administration . . . . The creation of an authority (with the express function of undertaking the care of the people's health as a whole) is the object of the Ministry of Health Bill—no light undertaking—still a means to an end rather than an end in itself . . . . The difficult question of the future structure of our local health organisation . . . . is the first and most bounden duty of the Minister (of Health) to take in hand upon his creation."

REFORM OF LOCAL GOVERNMENT.

Looking at the problem from the standpoint of the different local authorities, it is stated in the same document:—

> "No proposal can be made at the present time for the extension or acquisition of powers by any one set of authorities without an outcry from some other set of authorities that their province is being touched upon."

The only way out is a root-and-branch reform of local government. Without this a Ministry of Health must continue relatively ineffective, and we may profitably devote a few minutes to an enumeration of some of the local anomalies which necessitate this root-and-branch reform of local government. The present occasion is particularly opportune in view of the fact that two Royal Commissions are now engaged in receiving evidence on the problems of local government and of health insurance administration. Although I have not had the opportunity of seeing the evidence given before either of these Commissions, its general trend must follow what many years of experience in administration has rendered familiar, and I propose briefly to set out three of the chief defects needing remedy and the general lines on which remedies for these three defects will need to be organised. This occasion is the more opportune in view of the recent second reading of the Ministry of Health's Rating and Valuation Bill. The passing of this Bill into law will represent the first step in the reforms which most of us desire; and its contents give hope that at least two of these reforms—namely, reduction in the number of local sanitary authorities and fusion of the work of boards of guardians with that of the larger public health authorities—will at last be secured.

The parish is an extremely interesting survival of English local history; and it had its value when each parish was almost entirely separate from other parishes. But modern life has completely changed governmental problems; and centralised supervision with some measure of control in essential matters but with liberally delegated powers to large authorities acting for wide areas has become necessary, in view of the consideration that schemes of water-supply and sewerage, of hospital and sanatorium provision, and of successful control over the problems of food-supply and of the spread of infections must hereafter be devised on a large and comprehensive scale if they are to secure the greatest degree of success with the greatest frugality of effort and expenditure.

INEFFICIENCY OF SMALL SANITARY AUTHORITIES.

The inefficiency of the smaller sanitary authorities has been frequently exposed. There are in England and Wales 1727 sanitary authorities, not including 82 county boroughs. The total of 1809 compares with 317 education authorities and 635 boards of guardians. No one has suggested that the efficiency of the work of either educational or relief authorities is lowered by the relatively large areas and population served by them; and every line of evidence points to the opposite conclusion.

Writing in my Annual Report to the Local Government Board (1907–8, p. viii.) of the small sanitary districts in the West Riding—which are among the most extreme illustrations of splitting off from larger administrative areas—I made remarks which with minor variations may be applied to the majority of smaller sanitary districts:—

> "Local self-government in such districts is both extravagant and inefficient. There is an unnecessary multiplication of officers, who cannot be paid sufficiently to devote them-

* The stages by which this point has been reached have been outlined by me in a small volume on the Ministry of Health and Public Health Administration (G. P. Putnam's Sons).

selves without distraction to the public interests; on the part of the sanitary authorities of paltry districts like these, local and personal considerations too often outbalance the public interest, and the multiplication of small areas is a serious obstacle to an efficient and economical settlement of problems of water-supply and sewerage in which neighbouring districts are mutually concerned."

The following statement from my evidence before the Royal Commission on the Poor Laws (Appendix, vol. ix.) shows the allocation of population in Poor-law unions and in urban and rural sanitary districts. It may be taken as approximately applying at the present day.

"Taking the country as a whole, the average population of sanitary areas is not much more than one-third that of unions. This is owing chiefly to the number of very small urban and rural sanitary districts. Of the total 660 rural districts and 1129 urban districts 8·5 per cent. of the former and 19·9 per cent. of the latter had a population under 3000, 18·4 per cent. of the former and 39·1 per cent. of the latter had a population under 5000, 52·4 per cent. of the former and 62·2 per cent. of the latter had a population under 10,000. On the contrary, only 12·7 per cent. of the Poor-law unions had a population under 10,000. These figures need to be partially qualified for the few districts which have combined to secure the services of a medical officer of health who devotes the whole or a large part of his time to the public service. Such combined authorities do not affect materially the general view that more than half of the sanitary authorities—happily, however, representing a much smaller proportion of the population of the country—consist of units of less than 10,000 population.

"Experience has shown that, as area of administration is subdivided below certain minimum limits, so local personal interests predominate; and that, in accordance with this, a very large proportion of the smaller sanitary authorities are unworthy of their powers. Local considerations of expense and favouritism, and the insecurity of tenure of office of their sanitary officers, make efficient work an exception. A chief reason why sanitary progress has been impeded is furnished by the continued existence of these unsatisfactory small sanitary authorities. They do not as a rule obtain skilled advice, nor can they afford to obtain it when uncombined with other districts. Even when such advice is obtained, a small area of administration increases the risk of its neglect.

"In considering, therefore, the work of sanitary authorities under any improved conditions, it is indispensable that the anomalously small authorities must be combined or redistributed into units of at least the same order of magnitude as that of the large majority of the parochial unions, so that each may have within the reasonable limits of its purse the minimum staff and equipment required for efficiency."

Since the above comments were made combination of areas for the work of the medical officer of health has occurred more frequently; but this does not secure the satisfactory administration which could be obtained by complete fusion of the sanitary authorities concerned. What is required is that the number of sanitary authorities should be reduced to one-third their present number, the smaller number, outside county boroughs, being organically related to public health administration on a county scale.

In the Rating and Valuation Bill the parish is abandoned as the unit of local administration, and in consequence the number of rating authorities will be reduced from 12,882 to 648; and this raises a hopeful expectation that ere long administrative sanitary units outside county boroughs will be reduced, as suggested above, to one-third of their present number, and that the areas for Poor-law administration will be made identical with those for public health administration. It is only by such means that an initial condition of satisfactory and economical public health administration can be fulfilled.

REFORM OF THE POOR-LAW.

This brings me to the second great reform in local administrative machinery, the accomplishment of which is already terribly belated. When separate school boards ceased to exist, and local education authorities became an integral part of the larger public health authorities, an important step was taken in the direction of securing for (in most instances) suitably large local areas that all the functions of local government should be concentrated in what is essentially a Parliament for local government, sub-divided into committees for executive convenience, but the action of all these committees subject to approval by the one local authority. No sound administrative reason can be advanced for the continued exclusion of boards of guardians from this principle.

Every branch of public administration benefits by contact and exchange of views and experience with every other branch, and this is particularly true of the problems of destitution, which in very high measure imply the need for reducing the duration and gravity of disabling illness by efficient treatment and still more by the prevention of every form of preventable disease. It would take too long to set out the historic and the administrative reasons which necessitate a readjustment of local destitution work. Foremost among these, as you know, is the fact, that the work of Poor-law guardians has ceased to be chiefly the relief of the able-bodied destitute; and that now its chief work is on behalf of sick persons and of destitute women and children. In fact, destitution, in the official sense of the word, is largely a function of age, the number of persons in receipt of parochial relief at ages 0–5 being 1 in 73 of the total population at these ages, 1 in 303 at ages 15–25, 1 in 151 at ages 25–35, but increasing to 1 in 6 at ages 65–75, and 1 in 3 or 4 at ages 75 and upwards. (The figures relate to a census of paupers in England and Wales on a given day in 1906.) The age distribution of pauperism illustrates the importance of old-age pensions and of the additional provision for widows and for persons over 65 about to be made; and it gives an additional reason for redistribution of the work of relief of destitution according to its causation and character.

The needed data for reform and the directions which reform should take are adequately set out in the reports of the Royal Commission on the Poor-law issued over a dozen years ago after an inquiry lasting four years; and the more recent recommendations of the Maclean Committee issued in 1917 give the agreed conclusions of those who previously had written the partially discrepant Majority and Minority Reports of the earlier Royal Commission. The main recommendation of the Royal Commission and of the more recent Committee alike is that the boards of guardians should be abolished as separately elected bodies, and that the administrative areas should be those of counties and county boroughs, which number 144. Whether this number shall be strictly followed, or whether the areas of the new rateable districts which are proposed shall be followed is a question for detailed consideration. But if, outside county boroughs, county areas are sub-divided it is most desirable that the county council should be the chief authority in the county area and that for administration both in respect of public health and destitution all local authorities should be functionally affiliated to the county council.

This does not complete the toll of desirable liaisons and affiliations. Experience in public health administration and in the provision of institutional accommodation for the mentally and bodily sick has shown that further amalgamation is needed for special purposes. Water schemes are often unnecessarily extravagant, which do not include both county and county borough populations; the same remark applies to many sewerage problems; to the difficulties of river pollution; and often even more to institutional provision for the insane, for the feeble-minded, for surgical tuberculosis, for maternity cases, for small-pox, and so on.

METHOD OF SECURING COMBINED ACTION.

To secure such combined action as has been suggested two courses, at least, are practicable; action through a combined committee, or one authority acting for the other on agreed terms, subject, in the event of differences, to the final arbitration of the Ministry of Health. It is of the essence of such

combinations for special purposes that they should not be terminable, except by mutual consent, and with the sanction of the Ministry of Health.

When we look at the problems of our multiform local administrations and of occupational disputes we cannot boast. Let me instance a recent experience in a town not very remote from our place of meeting. This town, like so many others, had to seek for part of its water-supply outside its own borough boundaries, in this instance from deep wells with long adits bored in the chalk hills. These adits were in proximity to scattered houses and farmsteads in rural districts, whose drainage went partially into soaking cesspools. The town in question had for many years made monthly bacteriological examination of each of its five sources of water-supply, and had through its officials made inspections and inquiries, so far as was practicable, of the sanitary circumstances of all dwellings within the range of the gathering-grounds of its water-supply. In doing so there had been ascertained sources of possible contamination which it was necessary to control, and in a recent year the town council applied successfully to Parliament for power to make by-laws respecting premises outside its administration but within two miles of its pumping-stations, the enforcement of which would protect the water adits from sewage percolation. The by-laws so far as they are enforced will be expensive to the town council, and cost nothing to outside authorities or owners of property, inasmuch as the town council will be called upon to pay any expense, which would not have been necessary had the by-laws not been in force—e.g., in constructing and emptying cesspools and in laying sewers uncalled for except for protection of the borough's water-supplies.

But although this was so, the councils of two administrative counties, and of five rural or urban district councils lodged petitions against this most expensive legislation—expensive not to these councils, but to the borough council which was striving for ideal safety of its water-supply. The absurdity of such action is further illustrated by the fact that the borough supplied some of the petitioning authorities with their water. Such waste of public money and such petty refusal to look at a sanitary problem from the standpoint of the persons chiefly concerned ought in this day to be impossible. True, the borough council might by chlorination of the whole of its water-supply have materially reduced the risk implied in the continued license of the inhabitants of surrounding districts to empty their cesspools into the porous chalk of the gathering-ground of the public supply of water. Such chlorination is, of course, important wherever any work of extension of wells or of adits is in progress; but to require that possible contamination of the gathering-ground shall continue, and the effects of this nastiness shall subsequently be counteracted by chemical disinfection—even though this sometimes is necessary, when safety cannot otherwise be reached—is contrary to the first principles of preventive medicine.

The above instance of lack of coöperation, of a failure of the spirit of "team-work" on which human progress so largely depends, doubtless could be matched in the experience of others.

HOSPITAL BEDS.

So far I have emphasised the need for larger units of sanitary administration in many areas, and for making the important advance towards a local Parliament for all local purposes, by transferring the work of boards of guardians to the 144 or more larger authorities. Before passing on from this last point let me bear my testimony to the value of much of the work of the guardians for the sick poor, and my expression of belief that in the prospective new conditions the guardians will be able to continue their work on a larger scale, with specialised medical institutions, in which the differences between parochial and public health patients will have disappeared, and in which the quality of their work can be greatly increased.

According to an official hospital return made in 1915, the number of hospital beds provided by different authorities in England and Wales was over 300,000, of which 15 per cent. were in voluntary hospitals, and the remaining 85 per cent. were supplied by public health and Poor-law authorities—viz., 12 per cent. of the total in hospitals for fever, small-pox, and tuberculosis, 39 per cent. in asylums for the insane and institutions for the feeble-minded, and 34 per cent. in infirmaries and workhouses. The Poor-law infirmaries have been in largest measure the refuge of patients suffering from chronic disabling and incurable illness and have thus supplied a great public necessity. I have elsewhere given reasons for the conclusion that the protracted treatment of bedridden and advanced cases of open tuberculosis in these institutions has been an extremely important factor in diminishing massive infection by tubercle bacilli, and thus in bringing about that remarkable reduction in our national death-rate from tuberculosis which is proceeding with undiminished rapidity.

But at present we have the unfortunate picture of unoccupied wards and beds in Poor-law infirmaries, and especially unoccupied lying-in wards and beds, while voluntary hospitals find it difficult to provide the accommodation sought for, and while public health authorities are providing lying-in beds and beds for advanced consumptives in special institutions, apart from the Poor-law infirmaries. For this and for many other reasons there is urgent need for the assembly of all official hospital accommodation under a single local authority, and for a closer association between official and voluntary hospital accommodation.

The consideration of the medical problems of the Poor-law and the implied conclusion that all forms of treatment of disease must be related to a national policy or prevention of disease, both undertaken by the same authority, naturally leads to a consideration of the machinery of the national system of insurance against sickness; and it is in this connexion that there emerges the third great line of advance in public health administration, which is called for in the public interest.

NATIONAL HEALTH INSURANCE.

I am not concerned to discuss here the defects in the National Health Insurance system except in so far as they relate to local administrative machinery, though in passing I may express a regret that the system was introduced prior to the reform of the Poor-law which in 1908 had already been recommended after four years' investigation by a Royal Commission. Had the order of events been different the medical and the administrative problems of health insurance would have been less complicated, its practice more economical and efficient, and not, as at present, without the residential provision for patients which, inter alia, is still lacking to make the medical treatment of insured persons satisfactory.

The policy of insurance against the chief risks of life is reasonable and wise; and the community is so vitally interested in the satisfactory medical treatment and maintenance of its sick as to render it a wise precaution to contribute a large share of the expenditure needed to secure this. But as representatives of public health authorities you will scarcely need to be reminded that insurance is not prevention. Insurance against sickness, in fact, assumes the necessary continuance of sickness, and per se makes no provision for the reduction of sickness.

But although insurance is not an alternative to prevention, it may, when it becomes satisfactorily organised, greatly facilitate and stimulate preventive measures. The analogy of fire insurance and of insurance against motor accidents indicates one line of possible progress, additional benefits being secured by reduction of claims for sickness. The great

stumbling block in the adoption of prevention as a chief plank in the policy of insurance against sickness is the fact that while medical benefit is administered by local insurance committees who alone arrange with medical practitioners for ordinary domiciliary medical attention, monetary benefits—and unhappily there is included in these the maternity benefit—are administered by the various friendly societies and limited liability companies. These are not "territorialised"—if one may coin a word—and consequently local experiences cannot be compared, with a view to obtaining accurate information of excessive sickness. Nor are they "industrialised," thus enabling occupational sickness to be studied. On the other hand, the insurance committees act for county and county borough areas; and they have no direct relation geographically and but little relation functionally to the numerous societies or companies who compete within their area for the patronage of insured persons. Equal weekly payments are made by all insured persons for very unequal risks; and though this can be defended, it is scarcely defensible that in societies in which the need for extra benefits is greatest the surplus society funds available for this purpose are at their lowest. Even if it be not immediately practicable to territorialise the administration of sickness insurance, there is urgent need for treating in this way the surplus funds of all insurance societies and companies, and for applying these surplus funds to urgent medical needs. Among these in the order of importance and urgency may be mentioned the provision of hospital beds for all insured persons who can be more satisfactorily treated in hospital than at home, consultant facilities in all cases of dubious diagnosis, the provision of a national dental service, and the subsidisation of our county and district nurses to an extent which would make them available for every case of sickness in which the "panel" doctor asks for them. Perhaps before any of these should have been put the provision of laboratory facilities for diagnosis and treatment. In the Budget of 1914 a large Treasury grant was promised for this purpose, and though the Great War prevented the adoption of this scheme—which would have included physical and chemical as well as pathological laboratory facilities not merely for insured but for all patients—we may hope that this important lack in the scientific treatment of disease will ere long be met.

The need for the application of many of the medical reforms suggested above to others than insured persons need scarcely be stressed; and in this connexion much interest attaches to schemes of medical services which in recent years have been adumbrated, and to the admirable pioneer effort, made on the initiation of Dr. Middleton Martin in Gloucestershire, to provide a correlated system of medical help for the community.

But my main intention in this address is to limit my remarks to administrative machinery. In regard to insurance against sickness, I have already indicated that the unequal distribution of surplus funds in different societies—derived like their total funds to the extent of about 60 per cent. from contributions of the State and of employers, and of only about 40 per cent. from the insured persons themselves—under present society and company administration is an effective block to a more efficient service, and especially to a uniformly efficient service. This is especially so for the maternity benefit, and I enter a special plea in regard to this share of the present sectionalised monetary administration. What possibilities of increased good, of diminished maternal mortality and invalidism, and of lowering of the toll on infant life, especially during the first month after birth, would be developed were this fund administered by county and county borough councils as part of their maternity and child welfare schemes.

The residuum of insurance administration left nominally in the hands of the local insurance committee relates to the local work of panel doctors, but owing to the necessary centralisation of this work by means of the Ministry of Health's regulations they have little to do; and they can only be revitalised by the reconstitution of these committees as integral parts of county councils and county borough councils. Whether when thus reconstituted they should function separately from the other committees of these bodies which are dealing with medical services is a subject for detailed consideration.

LINES OF REFORM.

It is evident, then, that three great lines of reform of local administrative machinery are required. I might have enlarged the list by emphasising that the larger local authorities should take a larger share than at present in industrial hygiene by indicating the need for merging the certifying factory surgeon's work in that of the local public health service, for a closer identification of the local school medical service with the public health service, where this is not already secured; and other improvements in local machinery will doubtless occur to you. But the three problems I have outlined overshadow all others; and when we have larger public health authorities, which embrace in their work the medical care of insured persons and of the destitute, the public health service will have travelled far towards that efficiency and completeness of public health administration which alone is compatible with the economy of public health and life, as contrasted with the short-sighted parsimony which refuses to pay the price of health.

Oliver-Sharpey Lectures

ON THE

INTERPRETATION OF THE ELECTROMYOGRAM.

Delivered before the Royal College of Physicians of London on May 5th, 1925,

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LECTURE II.*

BEFORE we can say how far the recording of the electromyogram will be of real value in neurology we must answer the question which was left undecided in the previous lecture. The oscillating action currents show that during a voluntary contraction the muscle is activated from 50–250 times a second, and the point we have to settle is whether the nerve impulses recur at the same or at a much higher frequency. Given a picture of the fluctuations of current in the muscle, how are we to discover whether this picture corresponds more or less with what is happening in the motor nerve-fibres and in the motor centres of the cord? The most obvious way would be to make simultaneous records of the action currents in the motor nerve and the muscle during a reflex contraction and to see if they agree in frequency. Unfortunately, technical difficulties have stood in the way except in one or two instances. The difficulty lies in the recording of action currents from the motor nerve. When the muscle contracts reflexly in response to a single induction shock to an afferent nerve, it is possible to detect the action current in the motor nerve, though it is a great deal smaller than that produced by stimulating the motor nerve itself. Forbes[1] has shown that this small size is probably due to the fact that in the reflex the motor fibres are not all active at exactly the same moment; also there are many fibres in the nerve-trunk which do not become active at all in the reflex. The lack of synchronisation is probably a great deal worse in the usual reflex to such a stimulus as pinching the skin, and at any rate attempts to record the succession of reflex action

* Lecture I. appeared in THE LANCET last week.

currents in the nerve have usually failed. What evidence we have is to some extent conflicting. Veszi[2] found that during the convulsions produced by strychnine in the spinal frog, the motor nerves showed small action current oscillations at the same frequency as those in the muscle (about 40 a second). On the other hand, Athanasiu[3] describes oscillations of a much higher frequency (500–1000 per second) in the sciatic nerve of a dog during movements of progression. Forbes and Cattell[4] find nothing corresponding to this in the popliteal nerve during decerebrate rigidity although triode valve amplification was used.

ACTION CURRENTS IN THE PHRENIC NERVE.

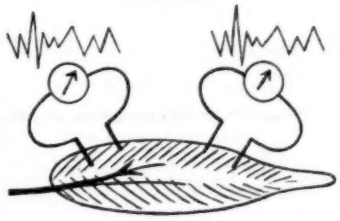
In one case, however, the evidence seems to be quite conclusive, and this is the case of the action currents in the phrenic nerve during the movements of breathing. The phrenic is an ideal nerve for this kind of investigation, as it is long, unbranched, and contains no fibres except those to and from the diaphragm. Dittler and Garten[5] found that during the movement of inspiration it was just possible to record a series of very small action currents in the phrenic with a frequency of the order of 70 a second, which corresponds closely with the frequency of the action currents in the muscle. This result was amply confirmed by Gasser and Newcomer[6] in 1921 with the aid of a valve amplifying system in conjunction with the string galvanometer. This gave an amplification of about 500 and showed the action currents in the phrenic as a series of large waves occurring in groups of 100–150 at the rate of 70–100 a second. The frequency of the responses in the phrenic corresponded very closely indeed with the frequency of the responses in the diaphragm muscle, simultaneous records of the two showing the same irregularities.

This work leaves no room for doubt that the movement of the diaphragm is brought about by a discharge of impulses at the rate of not more than 70–100 a second from the cord, and that each volley of impulses in the nerve produces a corresponding wave in the action current record of the muscle. It is noteworthy that the impulses in the different nerve-fibres must have been more or less in phase with one another to have given such definite waves as those found by Gasser and Newcomer, though the volleys of impulses are not discharged at perfectly regular intervals. No doubt the same is true of the discharge of impulses from the cord during strychnine convulsions where Veszi found definite waves in the nerve-trunk.

ACTION CURRENTS FROM DIFFERENT PARTS OF A MUSCLE.

In the case of the phrenic nerve and the diaphragm, therefore, the electromyogram gives us a valuable picture of the activity of the motor centre, since the successive impulses in the nerve-fibre do not recur too rapidly for the muscle-fibre to follow. It is arguable, of course, that the semi-automatic innervation of the diaphragm may differ from that of a skeletal muscle, the frequency of the nerve impulses being much higher for a voluntary movement than for one like breathing. There are, however, certain less direct lines of evidence for the view that in skeletal muscle, too, the frequency of the nerve impulses is no greater than that of the waves in the electromyogram. The most important is that brought forward by Bass and Trendelenburg.[7] Using two pairs of needle electrodes they led off the action currents from two distinct regions in a muscle and recorded them simultaneously with two galvanometers. They found that the waves showed a very close correspondence in the two records as long as the distance between the two pairs of electrodes did not exceed about 5–6 cm. The electrodes were so arranged that a current in the one circuit would not affect the other and that the two pairs would be in connexion with different muscle-fibres. The agreement of the waves recorded by the two strings certainly suggests that each corresponds to a volley of impulses from the motor centre (Fig. 1). It is not surprising that there is no longer an agreement when the distance between the two pairs of leads is increased to more than 5 cm. It means no more than that the whole of the motor neurones to a large muscle do not always act in complete unison. If the irregular response of the muscle had been produced by a much more rapid series (regular or irregular) of impulses in the nerve-fibres it seems unlikely that two different groups of muscle-fibres would show the same irregularities, but the experiment is not altogether conclusive, for sometimes an extremely rapid regular series of stimuli to a motor nerve (800 a second) will produce large irregular action currents in the muscle. From the size and arrangement of these it is difficult to avoid the belief that most of the muscle-fibres are responding synchronously, though why they should do so is not very clear. The chance of this occurring might be greater if the impulses in the nerve-fibres were irregularly spaced, and the irregularity of the muscle response might then be determined by this spacing without necessarily bearing much resemblance to it.

FIG. 1.



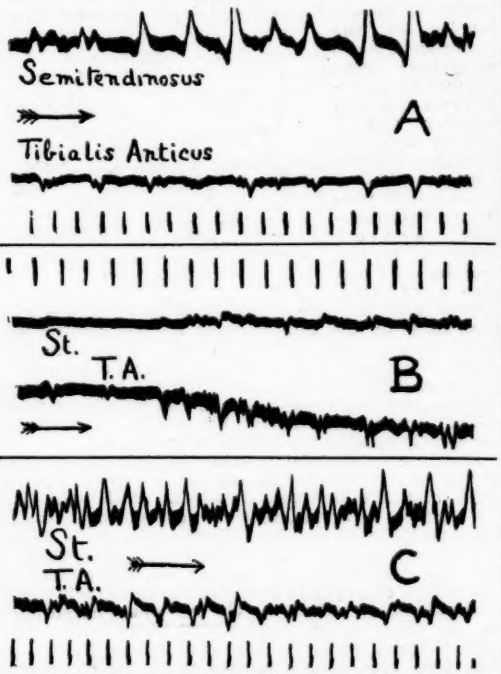
Bass and Trendelenburg made the further interesting experiment of comparing the action currents in the right and left temporal muscles. Although these act together as a rule, they found that there was no correspondence in the two electromyograms. Taken in conjunction with their evidence of correspondence in two regions of one muscle this can only mean that the volleys of impulses from the right and left motor nuclei are not identical. In the case of the diaphragm, on the other hand, Gasser and Newcomer found corresponding waves in the two phrenic nerves, so that here both motor centres must act in unison. I have occasionally found a close correspondence in the action currents of two synergic muscles contracting together in a reflex. Fig. 2, A and B, shows two records of this kind taken from the semi-tendinosus and tibialis anticus of a spinal (decapitated) cat during the flexion reflex. The reflex was produced by pinching the foot, and the movement was jerky and intermittent. The electromyogram consists of discrete waves or small groups of waves at a low frequency with definite pauses between them, and the waves in the two muscles agree fairly closely. The agreement comes to an end as soon as the contraction becomes continuous (Fig. 2, C). The same kind of agreement is found in the groups of electric responses which occur during a strychnine convulsion in the two muscles. Evidently the spinal centres must discharge nearly simultaneously to produce these identical waves, but it is quite possible that the discharge consists of a very rapid series of impulses in each nerve-fibre, the muscle responding only once or twice to each series.

EVIDENCE FOR HIGH FREQUENCY IN NERVE.

So far the evidence has been in favour of the view that each wave in the electromyogram can be taken to represent a volley of impulses from some of the spinal motor neurones. In the one case of the phrenic the evidence is conclusive. There are two observations which seem to favour the opposite view—that the nerve impulses recur much faster than the waves in the electromyogram. One is the undoubted fact, shown by Forbes and Rappleye,[8] that cooling the muscle decreases the frequency of the waves in the electromyogram. As the cooling has not affected the central nervous system it appears that the frequency of the electromyogram depends on the state of the muscle and is not determined entirely by the rate of spinal discharge. This conclusion would be inevitable if the cooling could be strictly confined to the effector

organ, the muscle, but an element of doubt comes from the fact that the sense organs and sensory nerve-fibres in the muscle are cooled too, so that both ends of the proprioceptor arc have been interfered with. Dusser de Barenne[9] finds that the frequency of the

FIG. 2.



A and B, Simultaneous records from the semitendinosus and tibialis anticus during the flexion reflex in a spinal cat. Reflex evoked by pinching the foot. The records show synchronous waves in the two muscles. Time marker records 1/50 sec. intervals. C, Reflex fully developed. The waves do not now agree.

electromyogram is reduced by injecting novocaine in dose sufficient to interfere with muscle sensation but not with voluntary power, and the reduction in the cooled muscle may also depend on a partial failure of the proprioceptor supply. In the absence of exact measurements of the temperature within the muscle and of the sensibility of the muscles and joints, it is difficult to say whether the cooled muscle really behaves as it does because it is ataxic, but Miss Cooper and I[10] have investigated the parallel case of the reflex movements of spinal animals, and we found that a very considerable temperature reduction was necessary before there was any change in the electromyogram frequency.

The temperature effect is not conclusive therefore. The other line of evidence is that brought forward by Athanasiu, and it depends on the observation of very rapid oscillations in the records taken from motor nerve-trunks during reflex movements. This again is not altogether conclusive, for Athanasiu finds much the same small, rapid oscillations in the record from the muscle. He regards these as due to the intramuscular nerve-trunks, but Forbes has pointed out that this interpretation is quite untenable, since the action currents of the intramuscular nerves would be far too small to affect a galvanometer leading off from the muscle.

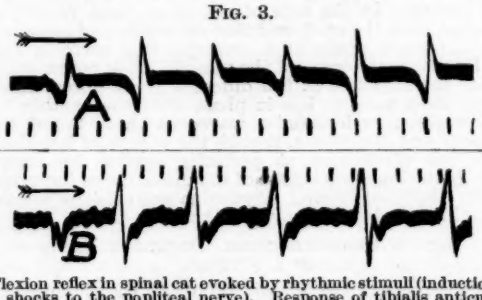
It is to be hoped that the whole question may be cleared up before long by an extension of what we may call the Gasser and Newcomer experiment to other nerves than the phrenic and other movements than those of breathing. Meanwhile, however, we have a prima facie case for supposing that each of the larger waves in the electromyogram is produced by a volley of impulses from the motor centre in the cord, and that the appearance of a fairly regular succession of large waves (as in a maximal voluntary contraction) implies a fairly regular succession of volleys, the motor centre "beating" as a whole with only a few neurones out of phase with the majority.

EFFECTS OF RHYTHMIC STIMULATION.

A rhythmic discharge of this kind might have two possible explanations. It might depend on the natural period of the spinal motor neurones themselves, or it might be due to a rhythmic sequence of impulses arriving at the spinal motor centre from some other part of the nervous system. Now Sherrington has pointed out that the final common path of several reflex arcs should be aperiodic, since it must take part in many different types of response. But in this sense "aperiodic" means only that the final common path should have no period of its own measured in seconds or minutes; periodicities as short as 1/50 or 1/100 second are quite another matter and the argument does not profess to take them into account. The trend of recent work, starting with that of Beritoff, has been to show that the spinal motor neurones are not limited to one definite frequency. They can certainly be made to discharge at many different frequencies up to and over 100 a second if a rhythmic sequence of impulses reaches them.

If the flexion reflex is produced in a spinal cat by pinching the foot, the electromyogram shows the usual irregular oscillations at the usual frequency, but if instead of a "natural" stimulus such as pinching we use an electric shock repeated regularly, then the response bears very clear indications of the frequency of the stimuli. The relation of the response frequency to the stimulus frequency in different reflexes and in different conditions of the central nervous system

FIG. 3.

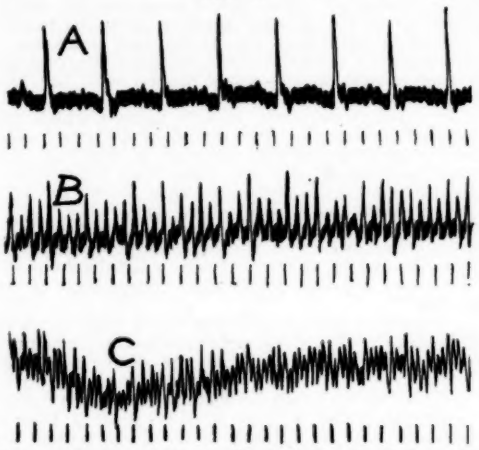


Flexion reflex in spinal cat evoked by rhythmic stimuli (induction shocks to the popliteal nerve). Response of tibialis anticus. A. Weak stimuli, about 13 a sec.; response consists of primary waves only. B. Stronger stimuli; secondary waves as well as primary.

has been very fully investigated by Liddell and Sherrington[11] using the mechanical response of the muscle recorded with a high-period isometric lever, and Miss Cooper and I[12] have found much the same results with the electric response. These experiments show that in certain reflexes, of which the flexion reflex in the spinal animal is a typical example, the response is very closely related to the stimulus, almost as closely as it is in a muscle and nerve preparation. The contraction attains its maximum almost at once and does not persist for more than a few seconds after the stimulus has ceased. The plateau of the contraction shows well-marked notches corresponding in frequency to that of the stimuli, and the electric response consists of a series of large action currents at the same frequency. The agreement only fails when the stimulus frequency is raised to 250–300 a second. If the stimuli are weak and the response poor (as in an animal suffering from loss of blood), the electromyogram consists of nothing but the large "primary" waves corresponding with the stimuli. With stronger stimuli, or in more active preparations, the intervals between them may be filled in with a number of small "secondary" waves (Figs. 3 and 4). If, instead of

flexion, we record the crossed extension reflex, the time-relations of the response are quite different. Liddell and Sherrington find that the contraction rises slowly to a plateau and may remain long after

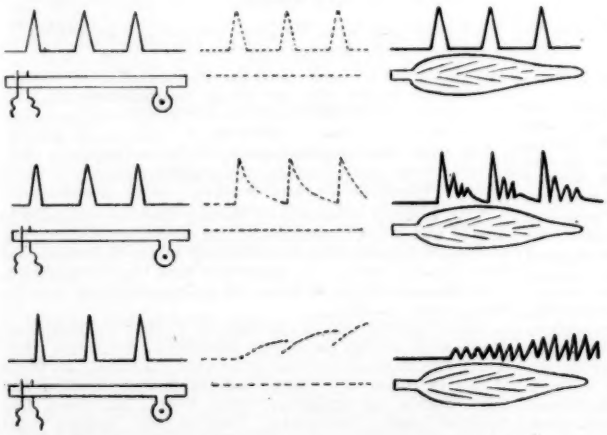
FIG. 4.



Flexion reflex in spinal cat with rhythmic stimulation. More excitable preparation than that in Fig. 3. Frequency of stimuli in A 17 a sec., in B 90 a sec., in C 160 a sec. The response shows primary waves at the same frequency.

the stimulus has ceased. The electric response may show primary waves when the stimulus frequency is low, but there is often no sign of them, the record consisting of a rapid, irregular succession of small waves (Fig. 5). Sherrington classifies a reflex of this kind as of the "Recruitment" type in view of the gradual, instead of abrupt, increase in the strength of contraction, and he points out that the response shows what may be well compared with mechanical *inertia* in its slow development and *momentum* in its tendency to outlast the stimulus. The different types of response preserve their character in spite of the division of the sensory fibres which arise in the muscles themselves, so that the differences evidently depend on the central connexions of the various arcs.

FIG. 6.



They do not depend on the motor neurones themselves, for certain reflexes using the extensor muscles have as little inertia and after-discharge as the flexion reflex.

Though diagrams have a dangerous simplicity, that shown in Fig. 6 may help to explain matters. This diagram represents each volley of afferent impulses as calling up an unspecified "central process," which in its turn determines the response of the motor neurones. According as the time-relations of the central process are abrupt or gradual we shall have a reflex of Sherrington's "*type d'emblée*" or of the recruitment type. But even when it is of the latter type, where the response does not follow the rhythm of the stimulus, there is still no indication of a definite periodicity in the central process or in the motor neurones, for the small waves have no definite frequency.

So far, then, we have no evidence of a natural period in the motor neurones. But in the last analysis it is clear that the motor neurone does have a period of its own, for the nerve-fibre enters into the usual refractory state after an impulse has passed down it, and this limits the maximum frequency of response in the nerve to about 1000 a second. There is some evidence that the refractory period of the central part of a reflex arc may be longer than this, nearer 1/300 second, for it seems to be impossible to get rhythmic discharges from the cord at a higher frequency than this.[13] But the evidence for this is, perhaps, not conclusive. In any case these very short time intervals are a long way from the 50 a second rhythm of the voluntary contraction, and yet the rhythm in the latter may be almost as definite as the rhythm in a reflex produced by stimuli at 50 a second to the afferent nerve.

NATURAL FREQUENCY OF MOTOR NEURONES.

One possibility which must be considered is that the nerve cells have a natural tendency to discharge at 50 a second, and yet are able to discharge much more rapidly when afferent impulses reach them at a higher

FIG. 5.

Crossed extension reflex. Decerebrate cat. Response of quadriceps extensor. Stimulation at 30 a sec., but no evidence of waves at this frequency in the record.

frequency. The heart may be taken as a parallel case, for here the frequency of the normal beat is a good deal less than the maximum frequency at which the heart can be driven. The strongest argument in support of this view of an intrinsic frequency in the motor neurones comes from some recent experiments, as yet unpublished, which Dr. Dusser de Barenne has kindly allowed me to quote. Working with Dr. Brevée, he has investigated the effect of local application of novocaine to the exposed cord isolated from the brain. If a reflex movement is produced by touching the dorsum of the exposed cord, before the use of novocaine the usual very irregular electromyogram is recorded. Novocaine is now applied to the dorsum of the cord, so that, as it penetrates, more and more of the nervous structures will be thrown out of action. The result is that the electromyogram becomes progressively more and more regular, and finally, just before the movements cease to be produced by touching the cord, the response shows an extremely regular rhythm of about 50 a second. At this stage we may imagine that most or all of the afferent structures are out of action and the stimulus takes effect directly on the anterior horn cells (which succumb themselves very soon afterwards). The stimulus is not periodic, but the motor cells respond with their natural rhythm of 50 a second. Since there can be no question here of a rhythmic excitation of the motor cells by afferent impulses, it is difficult to avoid the conclusion that the period is that of the

cells themselves and that they are so connected that they discharge in unison.

EFFECT OF AFFERENT IMPULSES ARISING IN THE MUSCLES.

There is, however, another very important group of experiments which shows that periodic afferent impulses may have a considerable effect on the frequency of the voluntary electromyogram, just as they do in the flexion reflex. These experiments have been carried out by Hoffmann[14] and Preisendorfer, and they are concerned with the relation of the tendon reflexes (Eigenreflexe) to the rhythm of the contraction. If the proprioceptors of a muscle are stimulated by making the muscle contract suddenly by an electrical stimulus, or by a sudden mechanical jerk, there is usually the answering reflex twitch of which the familiar tendon jerk is the typical example. If the stimulus is rapidly repeated, the reflex effect is also repeated at the same frequency (up to 100 a second or more), but in an uncontracted muscle the reflexes may be extremely small or absent altogether. If, now, a voluntary contraction of the muscle is produced during such repeated stimulation of the sensory endings in the muscle, the electromyogram does not show the usual irregularity. Instead it consists of a series of large waves having the frequency of the stimuli with very small irregular waves between them. In fact, the record is now little more than a series of greatly augmented proprioceptor reflexes. The cortical effect has been to make the anterior horn cells respond much more readily to the periodic afferent impulses which formerly produced only a very slight response.

It seems, then, that the cortical influence by itself can have very little tendency to determine any particular frequency of discharge from the motor neurones, for these are free to pick up whatever frequency happens to be reaching them from the proprioceptor paths. It is possible that a regular frequency of discharge might arise whenever the natural period of mechanical vibration of the muscle happened to coincide with the latent period of the reflex. The contraction would then consist of a series of twitches, each one stimulating the proprioceptor endings and so evoking the next—the whole process being something like an ankle clonus on a much finer scale. The rhythm would then be determined by the time taken between the stimulus and the reflex response, and it is true that in several cases this is of the order of 1/50 second. But in some (particularly those from the arm muscles) it is a good deal shorter, and Hoffmann very wisely refuses to theorise as to the precise relation of the proprioceptor reflexes to the normal voluntary contraction.

EFFECT OF OTHER AFFERENT IMPULSES.

It might seem likely that other afferent impulses besides those arising in the muscles might have an effect on the frequency of discharge from the motor cells. As we have seen, in the flexion reflex of the spinal cat a rhythmic stimulus to the skin or to any of the sensory nerve trunks leads to a response in which the stimulus frequency is clearly marked, and possibly the same result might be given in a baby or in an adult with complete division of the cord. In the normal adult, however, a painful stimulus to the foot does not produce a flexion reflex, and in the movements which do occur there is no evidence of the stimulus frequency. In my own case, at least, a stimulus strong enough to be extremely painful will generally force me to contract most of the leg muscles, but there seems to be no tendency to a definite movement of flexion or, indeed, to any fixed response. If the stimulus is a rhythmic series of induction shocks, the electromyogram from the tibialis anticus or the calf muscles shows nothing more than the usual irregular oscillations and differs in no way from the electromyogram of an ordinary voluntary contraction.

This result supports Hoffmann's contention that the "Eigenreflexe" or proprioceptor reflexes are in a class by themselves in that there is a much closer connexion between afferent and efferent neurones than there is in other kinds of reflex arc. This is suggested by the very short latent period, the absence of anything in the nature of momentum, inertia or fatigue, the absence of any change with strychnine, &c. Hoffmann's work shows that in man, with the brain in full control, the spinal motor neurones are directly accessible to the afferent impulses from the muscle; it is clear that they are much less accessible to impulses from the pain-fibres, although the connexion is close enough in the spinal animal with the brain destroyed.

We have, then, two possible factors which may help to determine the frequency of the electromyogram. One is a natural tendency of the spinal motor neurones to discharge at 50 a second when their excitability is raised by the cortical effect and they are not furnished with a ready-made frequency. The other is the tendency of the motor neurones to be influenced by afferent impulses from the contracting muscle itself—impulses which might well have a definite frequency determined by the mechanical properties of the muscle.

I have said little or nothing in all this about the application of the electromyogram to the problems of clinical neurology, but I have probably said quite enough to show that the interpretation of the curves is still far too uncertain for them to give much definite information. But I hope it has appeared that its investigation in movements of all kinds, normal and abnormal, may help enormously towards a real understanding of the electromyogram, and I hope it has appeared that such an understanding is well worth reaching.

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THE PROBLEM OF MALIGNANCY

FROM A PURELY RADIOLOGICAL STANDPOINT.

A paper read before the American Medical Association at Atlantic City, May 27th, 1925,

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"By Doubting we come to Truth."—*Cicero.*

"Who never doubted, never half believed,
Where doubt, there Truth is."—*P. J. Bailey.*

THE history of medicine during the last century is one of the great romances of the world, corresponding to that wonderful epoch in history when Columbus set forth on his voyage of discovery and the Portuguese, rounding the Cape of Good Hope, found their way to India and the East.

As in the sixteenth century, so to-day in medicine, whole new worlds have been opened up by those who, using the microscope and laboratory methods as their vessel of discovery, have navigated and charted the new worlds of science. Once more, as when the Spanish and Portuguese divided the known and unknown world between them, there is a dividing line, imaginary, no doubt, and on the one side we have the possessions and observations of the old order of naked-eye or macroscopic observation, and on the other the accurately mapped new fields that have fallen to the microscope. The mass of microscopic discovery has added so greatly to the sum of medical

knowledge that to-day it is a human impossibility to master the whole of it, while the older macroscopic knowledge and observation have, by comparison, been almost eclipsed. Yet, with all the advances, there is one problem on which even the microscope seems to shed no new light—i.e., the cause of cancer—for in spite of all the world-wide research and the voluminous writings on the subject, the artificial production of growths in animals and plants, yet we know practically nothing more than our fathers as to the nature of human cancer.

New Type of Radiations.

In these last 29 years, however, a new light has crept in on this dread and growing scourge (300 per cent. increase in the last 70 years), one which has not, I think, received the consideration it should have done, especially from the microscopic point of view. Investigators of the problems of disease are all looking to the microscope to aid them in discovery, and the new type of radiations do not fall within its field of vision. In the case of cancer the eyes of all radiologists have been turned on the definite but elusive curative effects of the new rays and, may be, we have neglected to note "the writing on the wall" as we pushed onwards with more and more powerful radiations in our search for the *cure* of the disease. It always seemed that just round the corner lay the cure and increase of the penetration or quantity of the radiations applied would make all the difference. True, we have been disappointed, but it has made our outlook always tend towards maximum rather than minimum doses of this powerful agency—i.e., we have latterly tended to use radiation as a destructive rather than as a medicinal agency. We have written of our successes and failures in treatment, and of the tantalising uncertainty of our results, and we have recorded the radiographic appearance of cancer, but have we stopped to take stock and think what these things mean? Have we turned to examine our observations from the point of view of the nature of the disease, quite apart from any thought of the cure? Or have we *also* been content to take it for granted that the microscope, and the microscope only, is the chosen vessel of discovery? When Columbus saw the failure of the Portuguese navigators in their search for the Indies, he decided to set sail in the opposite direction on his voyage of discovery, for it was obvious that the fabled Indies must lie somewhere. So, in like manner, I invite you to look in the opposite direction, to forsake the microscope and the assumption of its omnipotence, and to consider a variety of radiological and clinical observations for which I claim no originality or expert knowledge on the subject, and which are of the older microscopic school.

Under X ray and radium treatment the cure, or arrest of the progress, of some malignant growths is a definite fact, and we know with certainty that we have applied some factor which has altered the normal course of events. Many of the observations, however, are matters that are not capable of scientific proof, but are commonly accepted by those who practise radiation therapy. Others again are matters of surmise only, resting on no definite scientific data, in which, from long experience, one has a definite impression, a clinical sense, which may or may not be shared by others.

X Rays in Cancer: Contradictory Results.

Under the generic term "cancer" we include a number of diseases that are characterised by cell overgrowth, and that normally end in the death of the patient. The two great groups of the carcinomata and sarcomata are subdivided, by the microscope, into a number of less clearly defined varieties, but in the natural course of events they all carry the one definite common factor, death, as their ultimate termination. Some are rapid in their course, others less so. Some tend to extend locally only, others to rapid dissemination, and generally speaking the microscopic examination of the type of cell will give an indication of the prognosis. Yet every surgeon and every radiologist occasionally meets with an apparently hopeless growth that melts away as if by magic, while an exactly similar case, microscopically and macroscopically, runs its course entirely uninfluenced by the same treatment. In the early days of radium Wickham recorded the apparent cure of a carcinoma of the uterus with what would now be regarded as a futile dose, and almost every early worker with X rays had occasional incomprehensible and cheering results of the same order.

At the present time Wintz, quoting figures of his uterine and cervix cancer "cures," states that "in spite of the best technique, most favourable conditions and good general health of the patient, the results are from time to time inexplicable." He states that from 15 per cent. to 20 per cent. of absolute failures occur even in the cases in which his past experience would lead him to expect a successful result. Observers are generally agreed that, as a class, the malignant growths of the cervix are those which are most likely to yield a fair proportion of satisfactory results. The reason for this probably lies in the fact that in post-mortem examination it is found that 55 per cent. of these gynæcological cases show entire freedom from metastases, whereas breast cancer yields only 3·2 per cent. freedom from metastases in the post-mortem records (Lazarus-Barlow).

There are, however, evidently different types, histologically identical, at the one end of the scale those easily influenced by radiations, at the other those that are quite intractable—i.e., a radio-sensitive and a radio-insensitive type. Since all living tissues can be killed by destructive doses of radiations, all growths are classed as radio-insensitive which have the same or a greater degree of radio-tolerance than the surrounding normal structures.

The problem of malignancy as seen by the radiologist is full of contradictions, and it is clear that neither the clinical character nor the cell form of the constituents, although usually reliable, are the definite criterion as to the real nature of a tumour. For want of a better classification we must, therefore, still give the same name to histologically identical growths, although some of them disappear under radiations while others persistently extend and recur, regardless of all the wiles of the radiologist; one cannot help feeling that there is some fundamental difference in the two, and that this difference is not expressed in the cells that are seen under the microscope. The one is a radio-sensitive and the other a radio-insensitive tumour. As yet the only means of determining the identity of each is by watching the effect of radiation treatment—an agency that may be applied in homœopathic, medicinal or such destructive doses that they "cure the disease and kill the patient."

Illustrative Cases.

Certain cases are landmarks in every medical man's experience, and the following are the only cases I shall mention in detail, for it is my purpose, as far as possible, to view things from such a distance that detail is lost. The first case was not labelled as one of the regular types of malignant disease, but out of it arose the train of thought which is embodied in this present paper.

In 1910 a healthy boy of 15, an only child, came with large masses of glands in the left groin and right side of the neck, and smaller masses elsewhere. The spleen also was slightly enlarged and it was diagnosed as a case of acute lymphadenoma, but it is just possible that it was a case of Mikulicz's disease. No changes were found in the blood at any time except slight secondary anæmia. He was treated with X rays and the glands disappeared. He went away to the hills but was back in a fortnight, gasping for breath, and with large masses in the mediastinum. These also quickly disappeared, but the boy, though apparently well again, was kept under observation and frequent treatment. Glands appeared from time to time in all the usual sites but were always easily disposed of.

There was some swelling of the hands and feet and these became exceedingly painful. Radiographs showed definite changes in the bones of one of the hands, and these I shall refer to later. X ray treatment cured the pain and swelling

completely and he could dress himself and use ordinary boots. But gradually the boy lost strength in spite of the fact that every gland disappeared under treatment almost as soon as it was detected. Hundreds of lymphoid nodules appeared in the skin of the back and in other situations, some breaking down and forming ulcers about ¾ inch in diameter, and these also yielded to the magic. When only a portable coil and accumulators were available even the masses in deep situations yielded. Yet all the time the weakness and slight cachexia increased, and after 15 months of the toughest medical fight I ever had he died from exhaustion. It was one of the most disheartening cases imaginable, for the faith of the parents and son was kept up the whole time by the effects of the rays, and yet to the onlooker it was obvious that it was only the glands and nodules, the symptoms, the accidental factors, that were influenced. There was evidently some underlying cause at work that we were not touching at all by our radiations. In this case, at any rate, it was perfectly clear that there was a definitely *malignant disease* at work, of which the lymphoid overgrowths were but a symptom. Without X rays the glands would have wrought death, accidental, as I term it, in a few weeks; but with treatment the accidental death was averted and we had the picture of the underlying malignant disease running its slow and certain course, unaffected in any way by the rays. The outstanding impression on my mind was the fact of an underlying *malignant disease* which was giving rise to enormous overgrowth of all lymphatic tissue, these overgrowths being practically malignant growths, although they did not tend to invade surrounding structures.

And then on the other side of the picture are two very early private cases, clinically almost identical so far as one could see, in which the diagnosis was retroperitoneal sarcoma originating in the suprarenals.

In one case, a boy of 9 months, no operation was performed. In the other, a girl of 15 months, the late Prof. G. A. Wright explored, found a typical sarcomatous mass that was friable and almost breaking down, and which he did not attempt to remove. Both these infants were irradiated with such apparatus as we had in those days—at the most the tubes would not stand more than half a milliampère at perhaps a 3-inch to 4-inch spark gap. There were no filters except a layer of felt, and the skin was hardly bronzed. Yet both these children recovered completely and are now normal healthy young adults. What had wrought this change? I know not, but it was quite certain that these malignant growths were affected by something, presumably the rays, in spite of the fact that so little could have reached the required depth. And the impress of these two cases on my mind was that of a locally *malignant growth*, fortunately of an unusually radio-sensitive type, in which the originating cause had disappeared.

From these isolated and rather unusual cases, therefore, I came to looking at cancer cases in a different light. It occurred to me that perhaps a *malignant growth* might be originated by a *malignant causative disease* and that these two elements might exist concurrently, or that the malignant causative disease, having started the malignant cell overgrowth, might die out, leaving the malignant growth to accomplish the death of the patient, but thwarted in the case of these two infants by the fact that the growth was particularly radio-sensitive and that there were no untreated metastases.

There is one, and only one, certain proof of malignancy—i.e., the death of the patient—for neither the clinical nor the microscopic characters of the cells are infallible evidence of malignancy. If a patient recovers from what was clinically and microscopically a malignant growth, we write it down as either a miracle or that the diagnosis was wrong. One man put it that the radiologists' successes in cancer were the clinicians' failures in diagnosis, but this is far too sweeping and is not justified by experience, for these miracles are too frequent and too dramatic to be interpreted in this way. If the patient recovers, however, we can never say with certainty that he had been suffering from a malignant disease, for death is the one and only infallible proof that the process that we have been watching or treating is a malignant one. No clinical and no microscopic evidence is infallible. Microscopic malignant cell form and malignancy are not necessarily synonymous terms.

Different Causes of Death.

Death is the natural end-result, the one common factor, but the manner in which life is extinguished differs very widely and calls for more than passing consideration.

The first and far the commonest cause of death is that some vital organ is invaded by the direct extension of the primary growth or its metastases. This form of death is accidental and not an essential part of the malignant disease, for it is something approaching pure chance whether the growth attacks a vital part early or late. A very malignant type of growth in one part of the body may take a long time to kill the patient if situated in some less vital spot. One could, in fact, imagine a growth extending almost without limit, provided it maintained its blood-supply, if it did not invade a vital organ.

Secondly, there is death from septic infection with its resulting absorption, its cachexia, debility, and gradual wasting. This again is not an essential part of the malignant disease, although death supervenes. Within the body this source of danger to life is still only too common, but, thanks to X rays, we see less and less of this type of death from external ulceration, with its festering and fœtid ulcers.

The third and much more unusual type of death suggests that as in my lymphadenoma case there is another factor, one of which I have no proof, but of which I am fully convinced. We see some devitalising process at work and we usually attribute it to the effects of undiscovered secondary deposits, but in many cases I feel certain that it is largely the manifestation of an underlying malignant disease which unfailingly results in the gradual weakening of the patient, with cachexia, loss of energy and strength, and which ends inevitably in the death of exhaustion. Whenever we see a cancer patient with cachexia, apart from septic absorption, we know that, no matter whether the mass responds or does not respond to X rays, the patient will steadily go downhill and die, and in the terminal stages the temperature will rise, quite apart from the presence of any sepsis. This, to my mind, is the manifestation of the working of the true malignant disease. Provided the patient lives long enough this process is seen in varying degrees of intensity, but is always subject to the intervention of death from one of the intercurrent or "accidental" causes—invasion of vital organs or sepsis. It is seldom, if ever, seen in rodent ulcer, but its presence is often suggested in those forms of malignant disease of slow growth in which metastases are not attacking vital organs, and it gives one the impression that the ordinary causes of death in these diseases (extension and sepsis) are not only accidental, but that many of these growths are only an incident or accident in an underlying malignant disease. In order to save repetition I will call this hypothetical and entirely unknown quantity, this essential underlying malignant process, x, and I may as well say at once that I believe it will eventually be found in the blood, that it may disappear after originating the growth, and also that it may vary widely in intensity, quite apart from the type of growth it evokes.

The Unknown Quantity.

I believe that this x occurs in every case of true malignant growth, and yet, how can one explain the fact that certain cases are cured by surgery or by radiations, while others persist and spread, either directly or by metastases, in spite of all we can do? Think of a case of a rodent ulcer that fails to respond. The patient often remains in perfect health until sepsis or extensions slowly end the scene. It is a purely local disease and there seems to be no x in the case at all. It is merely a locally malignant disease and one which, mercifully, is usually radio-sensitive. It does not even tend to extend by metastases but only by direct spread. If x was ever present in the case, it has disappeared.

Now look at the type of breast growth in which all the conditions seem to be particularly favourable for

operation, so far as the surgeon can tell. In some of these a recurrence comes in or about the scar, which may respond perfectly to comparatively mild X ray treatment, and we see an apparent local cure. Unfortunately, however, there are only too often secondary deposits elsewhere that we cannot detect, and these are usually the "accidental" cause of death, and yet one feels practically certain that if these patients had been irradiated early enough there would have been no metastases and we should have obtained an actual cure, as we actually do in a considerable number of such cases. Occasionally one has the good fortune to treat a case of this type that is not complicated by operation. I see a woman from time to time who five years ago had a large and typical inoperable scirrhus with extensive glands both in the axilla and above the clavicle, and yet to-day the patient is in perfect health, and there is not a sign of any previous disease in the breast. In another case the breast became almost normal under radiations in the period of waiting for a bed in the hospital. The obvious thing to say, of course, is that the diagnosis was wrong, but a large number of what must have been similar cases, in which the surgeon states that he has been able to remove only a portion of the growth, are alive and well to this day. The cases are far too numerous to be accounted for by throwing doubt on the diagnosis of the clinician and microscopist. I interpret these very encouraging results by thinking of them as of only local malignancy, apart from metastatic spread. They happen to be radio-sensitive and we obtain an apparent cure; the cause, the x that originated the growth, has disappeared, and if the growth is completely eliminated by operation or by radiations or by a combination of the two an actual cure is effected.

Then one thinks of other radio-sensitive cases in which although recurrences disappear under the rays, others come up, and often we are also successful in dealing with these as they occur—the cause, the x, is still at work and sooner or later death comes, usually by internal deposits in vital organs and sometimes accompanied by the cachexia, &c., that is associated in my mind with x.

Radio-insensitive Cases.

But among those cases that seem to offer every prospect of success, and which are irradiated at the earliest possible moment after operation, there are some in which growths appear in or about the scar and which are quite uninfluenced by the rays—i.e., radio-insensitive. They spread by direct extension in spite of all we can do. Occasionally a change in the type of radiation raises our hopes for a time, but, nevertheless, death comes, generally by metastases. And yet, this absolutely uncontrollable, radio-insensitive disease seems to differ in no outward or microscopic characteristic from the other type which is radio-sensitive and which, apart from metastases, seems to promise such good results.

In many of these breast cases, however, in addition to the growth there seems to be some other factor at work. The tumour itself may have the same clinical and microscopic appearance as those in which we have obtained apparent cure, and it may or may not respond locally to radiation; but no matter what we do, there is the gradual wasting associated with cachexia which is, to my mind, evidence of the true underlying malignant disease, which when once established never seems to falter in its course, but unfailingly brings death no matter what happens to the growths, the cell overgrowth that takes place in its presence. The patient gets weaker and weaker, develops a temperature, and eventually dies from exhaustion, occasionally with so little of the cancerous growth itself that it looks very doubtful if the tumour could have been the cause of death. In its course it resembles a case of pernicious anæmia, complicated by a growth.

In some of the breast cases one can trace the same course of events as in the lymphadenoma boy, but less accurately and in a much more complex picture that is distorted and obscured by the malignant tumour and its symptoms. Sometimes one gets a clear impression of the underlying cause at work if the growth happens to be radio-sensitive, and we note the progressive weakness, which we usually ascribe to internal secondary deposits. I suggest, however, that, in part at least, it may be put down to the continued action of my hypothetical x.

I have chosen to speak in terms of those types of cancer which are most common and most easily observed, but my general impression of growths in other situations is on the same lines—i.e., that there are two distinct types clearly differentiated by the manner in which they do or do not respond to radiation. Some are much more susceptible than others in their reaction as well as by reason of their accessibility, but underlying and at the back of all of these there is a malignant causative disease, which may or may not persist after it has done the deadly work of initiating the growth.

In the radio-sensitive type we may hope for complete success if we can locate and heal the primary focus and its metastases, only if this underlying factor has disappeared, but if x is still at work, even in a very mild form, we shall not succeed in the end, for sooner or later recurrences, even if they are of radio-sensitive type, will come where we cannot detect them, and death follows. In the radio-insensitive type we can do nothing but watch the progress of the growth and its metastases. When x is *not* at work one has seen these tumours pursuing their tragic course for a year or more, with comparatively little, if any, lowering of the patient's vitality, till nerves are involved, when pain and loss of sleep undermine the patient's strength. The end in such cases is often pathetic, and it is a merciful release when, at last, some vital organ is put out of action.

In those cases which I suggest are due to the persistence of the true malignant cause, x, the picture, if we can eliminate the obsessing factor of the growth itself and its symptoms from our minds, is one of increasing debility, of the type of pernicious anæmia, and it is this disease which I would suggest to your minds as the simile of the underlying malignant disease. This fatal type of blood change is not associated with cell overgrowth, but you all know how frequently a case diagnosed as pernicious anæmia turns out in the end to be "due" to an internal growth. I suggest that in these cases of mistaken diagnosis we may have been confusing cause and effect, and it is possible that some of the cases of so-called pernicious anæmia are the uncomplicated action of my hypothetical x.

Is X a Blood Condition?

I suspect that this x is a blood condition, possibly a very delicate biochemical change that has a selective stimulating action on the growth of certain types of cell under favourable conditions, the type of cell affected depending on the nature of the biochemical change. Of the conditions we know nothing, but if one might indulge in pure speculation for a moment one might accept x as a temporary or permanent blood condition, very slight changes determining whether its action should influence one or other of the different types of cell to cancerous growth. Suppose that at the time this slight blood indisposition occurred there was irritation of, say, the breast cells by some course, it might stimulate these cells to disordered overgrowth, forming a malignant tumour that would normally run its fatal course, while the underlying malignant disease, the blood change, entirely disappeared. The patient is operated on and there is a "cure." One could imagine the same sequence of events occurring again after many years, and surely this is a more reasonable explanation than to think of malignant cells lying dormant for perhaps as long as 20 years.

Or we may suppose that the malignant disease in the blood gets a strong hold, and no matter what

treatment the growths receive as they appear the cause will still be at work, stimulating other groups of cells of the same type into activity, for its selective action is most definite. At the same time each of these growths is capable of dissemination in the various well-recognised ways, and before the malignant disease makes its presence known as a separate entity the growth has completely filled the picture. Suppose, however, x does not find any injured cells on which to act, or maybe the blood change does not happen to be one that affects any particular type of cell until very late, then we get the picture of the cases that approximate to pernicious anæmia.

This, of course, is all pure fantasy and put down simply to give more concrete form to my rather nebulous ideas as to the nature of x. It is, however, a most remarkable fact that a patient seldom suffers from two types of cell overgrowth at the same time. Scirrhus of the breast and similar types of growth elsewhere, colloid, columnar, squamous, round or spindle-celled overgrowth, many are the types, but only one type as a rule in one patient.

In the boy who forms the subject of my text the malignant disease disordered the reproduction of the lymphoid cells first in one region then in another, and later on practically universally, but never any other type of cell. Because these happened to be radio-sensitive we could watch the almost undisturbed progress of the malignant disease itself. In breast cancers it is only too common an occurrence to find the other breast affected, and with a cellular formation that is identical with the first growth.

A Reasonable Hypothesis.

Thanks to our teaching we are so taken up with the idea that all secondary manifestations arise from the one primary growth, and that the cause of the growth is contained in the mass itself, that we do not think of the possibility of some outside cause that may stimulate similar cell elements in other parts of the body and that some of them may be entirely independent growths originated by the same cause. To my mind the hypothesis I have suggested gives a much clearer idea of those unaccountable metastases that we could not explain on any reasonable grounds. We will all accept that a metastatic deposit may travel by the blood-stream, and we must accept that the lymph-stream carries the trouble along its course in the direction of its flow. We must also accept the fact that a growth creeps, say, across the middle line from, say, the breast, and we can trace the nodules in the course of spread by direct extension. And yet we see many cases of recurrence on the opposite breast, often in the outer upper quadrant, with not a trace of intervening growth. It is not just an occasional happening; it is a thing we are always looking out for, and the only explanation that is given is that it is lymphatic extension *against* the flow of the lymphatic stream. Such an explanation is against the laws of physics and experience, and I suggest that my hypothesis offers a much more reasonable explanation. The x that caused the original trouble is still present or has recurred, and it has affected another group of cells of the same class, stimulating them to malignant activity.

In one such case that I saw after writing this I noted three things. The right breast had been removed and there was (1) direct extension of small nodules in the skin across the middle line and elsewhere; (2) a large mass in the upper outer quadrant of the other breast with glands in the axilla; and (3) another curiously placed and much larger recurrence well below the scar. This last was puzzling till I thought of the possibility of a rudimentary breast in such a position. I believe that in this patient x was still at work, and in addition to the frequently noted stimulation of a growth in the other breast it had affected the rudimentary breast cells in addition, and that these two centres of growth were not recurrences in the ordinary sense but actually new primary growths set up by the same unknown factor that had initiated the original breast tumour. Is it not reasonable to suggest that the cause which originated the primary growth may still be at work in these cases and that it may set up a similar type of growth in other parts that contain the same cell formation?

There are relevant observations on post-operative breast treatment, blood changes, and manifestations in bone that give credence to the theory I have put forward.

Does this Theory Help Us in any Way Towards the Elucidation of the Great Problem?

I think that it does, for it suggests very strongly that it is waste of time and energy to look for the cause of cancer by gazing down a microscope at the sections of a cell overgrowth, and the end-result of a factor that may or may not have been present when the specimen was taken. That, perhaps, is a negative benefit. It does, however, indicate that if we are to find the cause we must sift our cases and attempt to determine accurately in which of these x is still at work and find out in what way the blood differs from those in which the disease is only locally malignant—i.e., in which x is no longer present. It is among the living, not among the dead, that hope lies. Certain observations as to changes in bones make me confident that the cause of malignant cell overgrowth is a systemic one, and the obvious inference is that it will be found in the living blood. Until we know with certainty in which cases x persists, we must search every cancer case and particularly attempt to find a difference in the blood between those that develop the ill-omened cachexia, as compared with those in whom the disease is only locally malignant as shown by operation or radiation "cures."

I am quite satisfied that it is useless to look for the cause of malignant disease in the growth itself, and that the exciting cause will eventually be found elsewhere, either in the blood or carried by the blood, and that it will probably be found in some minute bio-chemical change which affects the reaction of the blood upon certain types of cell, those cells being particularly susceptible that have suffered from some mechanical or inflammatory source of irritation or which in the natural course are undergoing degenerative changes at the end of their life of functional activity.

A Summary.

It is a usual custom to summarise a paper, and I am indebted to my partner, Dr. J. M. Woodburn Morison, for the following which he handed to me after reading an early manuscript:—

Let x be the underlying cause of cancer.
„ G „ a tumour that is radio-sensitive.
„ D „ the death of the patient.
„ L „ „ life „ „ „
„ O „ „ operation.
„ R „ „ radiation treatment.

Then
$$G + x = D$$
$$G - x = D$$
$$\left.\begin{matrix} G + x + R \\ G + x + O \end{matrix}\right\} = D$$
$$G - x + O = \frac{L}{2}$$
$$G - x + O + R = L$$

Therefore, the only cases in which we can hope for cure are those in which we have a radio-sensitive tumour, an absence of the underlying cause, and complete extirpation either by operation or by radiation or by a combination of the two. If, however, a growth is radio-insensitive there is no chance at all unless, perchance, a surgeon is fortunate in removing the whole of a growth and x is no longer present.

In conclusion, I wish to acknowledge the very great assistance I have received, wittingly and unwittingly, from many of my colleagues, particularly those who collaborate with me in the X ray work of the Manchester Royal Infirmary, Dr. Morison, Dr. A. Burrows, Dr. R. S. Paterson, and Dr. E. W. Twining.

CUTANEOUS MYIASIS IN MAN CAUSED BY *MUSCA DOMESTICA*.

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THE case of cutaneous myiasis about to be described is of peculiar interest, because, as far as we can discover, the larvæ of *Musca domestica* have not within recent years been recorded from the subcutaneous tissues of man. It is true that the larvæ of this fly are not uncommonly found in the human alimentary tract and even in the bladder, but the subcutaneous tissues is a most unusual place to find them. It is also interesting to note that although there were many larvæ in the legs they produced little or no discomfort, and apparently no secondary destruction of tissues. Had the tissues of the leg been invaded by the larvæ of a species of *Sarcophaga*, or by either of the screw-worm flies, *Chrysomyia macellaria* or *Chrysomyia bezziana*, there would have been extensive and serious destruction of tissues.

The patient was a man of over 80. He had chronic bronchitis and varicose veins of the lower extremities. Owing to the bronchitis it was not possible for him to lie down, and he spent most of his time sitting in his chair in front of the fire. The legs were bandaged. In June, 1924, he noticed above the right internal malleolus a small "hole," and he confessed to having rubbed his leg. He had the dermatitis so often associated with varicose veins. Shortly afterwards "maggots" were noticed on his leg, and the patient stated that he thinks the first maggot emerged from the small cavity above the malleolus. On their first appearance they remained for a day or so, and then were not observed for three weeks. After this they appeared at intervals until Dec. 15th, when the last specimen was seen. The right leg only was affected in this way. Below the knee the skin was inflamed, thickened, and moist, its surface being denuded of epithelium and raised into small elevations with somewhat deep crevices between them, and in one or two places there were little cavities. When the dressings were first removed on the occasion when the photograph was taken (see figure) only one or two larvæ were seen, but in a few moments the leg became alive with actively moving maggots. They appeared to exist in the small crevices and holes described. The condition gave the patient no inconvenience; indeed he was interested in his strange infection.

Characters of the Larvæ.

A number of the larvæ were collected in September by Dr. A. B. MacPherson, and preserved in 4 per cent. formalin. On examination later they proved to be the first and third instars of the larva of *Musca domestica* L. The following notes are given in the hope that they will be of some use to medical men who may come across the larvæ of this fly in the human body.

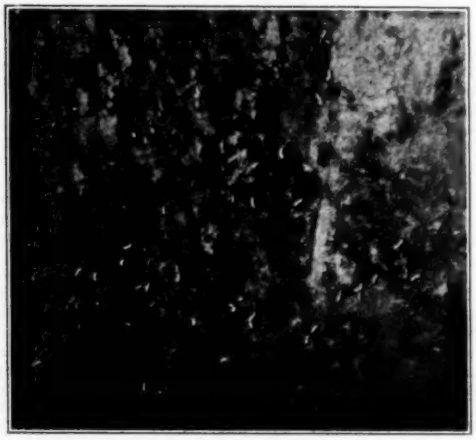
First Instar of the Larva of Musca Domestica.—This stage can always be recognised by the small size of the larva, the absence of the anterior spiracles (a character common to all the first-stage larvæ of the higher Diptera), the structure of the cephalo-pharyngeal skeleton, and the structure of the posterior stigmata. It will be noted that the pharyngeal plates are narrow and have a characteristic crescentic outline posteriorly, the dorsal and ventral processes or horns being well developed. There is a simple median mandibular hook, two well-developed spines, and many smaller ones on the skin in front of the oral opening. The posterior stigmatic openings are on slightly raised papillæ, and each is heart-shaped and has a single opening; there are a few small spines on the rims. In this stage there is a small belt of spines at the anterior end of the ventral surface of each of the eight posterior body segments.

Third Instar.—All the external and internal structures of use in identification are, in this stage, well developed. The anterior spiracles have from five to seven finger-like processes each with an opening at the end; it is not uncommon to find that the number of these processes varies in the same larva on the two sides. The cephalo-pharyngeal skeleton is well developed. As first pointed out by one of the writers, the mandibular hooks are unequal in size, the left being much smaller than the right. In all previous descriptions of the hooks of the third-stage larva of *Musca domestica*, and in all the excellent models on exhibition in public museums, only one hook is described and shown. There are, however, always two, and the left is very commonly obscured by the right if it is looked at on its side. This character is important in identification; it is common to the species of the genus *Musca* as well as to the larvæ of species of *Stomoxys*. The shape of the pharyngeal plates is also very characteristic, and especially the deep notch on the posterior surface.

The first and third stage larvæ (and, as a matter of fact, the second stage as well) can be readily distinguished from the same stages of other larvæ of the higher Diptera, which are likely to be found in human tissues, by noting the characters mentioned above.

Commentary.

From the notes of the case it seems clear that a female *Musca domestica* deposited its eggs in the vicinity of the "small hole," the ulcerous cavity, mentioned above early in June. Towards the end of the month the larvæ were noticed on the surface of the leg, and the patient noted that the first larva emerged from the cavity near the internal malleolus. The larvæ were noted for a day or two, and then they disappeared, to return at intervals of about three weeks or so; one larva was observed as late as Dec. 15th, 1924. The illustration shows the larvæ on the surface.



Reproduction of photograph of the diseased limb, slightly enlarged, showing the larvæ.

There are one or two points to which we would like to draw attention. First, we have no doubt that all these larvæ came from the eggs laid by a single fly. The fact that they continued to emerge at intervals for months is, we think, explained by noting that the larvæ of *Musca domestica* never flourish in either living or dead tissues. It is an unsuitable medium for them, and in this case they continued to emerge to the surface, evidently endeavouring to leave the leg. Some of the larvæ reached the third stage, but they were very small and incompletely developed specimens, and had these been allowed to pupate they would have given rise to very small flies. None of the larvæ collected had reached full growth, although they had been in the tissues of the leg for weeks. In confirmation of this view we may point out that one of us has tried to breed the larvæ of other species of *Musca* in the dead bodies of animals, but never succeeded in getting well-developed flies.

We wish to thank Dr. A. B. MacPherson, of Sunderland, under whose care the patient was, for his help and giving of facilities for observing and recording this strange case.

THE ARTIFICIAL INDUCTION OF LEUCOCYTOSIS.

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With Addendum by

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SOMETHING over a year ago it was suggested by work in the Municipal Laboratory of Southampton, with the aid of the former borough pathologist, Dr. Harry Simson, that the intramuscular injection of salicylate of mercury is followed by a marked increase in the production of white blood cells, which I took to explain the potent influence of this drug on certain manifestations of syphilis, on furunculosis, and small infected wounds. In the treatment of the latter infections good results have been obtained for about eight years in various parts of the world. The drug was used in the belief that the mercury was having its so-called specific influence on the treponemata, and that I had been fortunate in finding this effect extended to the pyogenic organisms. To me the knowledge that the oldest drug we know induced an increase of white cells seemed logically to explain its satisfactory action in syphilis, as well as in the other conditions. It is a matter of common knowledge that a man in the best condition has a high white cell count, and can stand exposure best to infections. When harmful infecting organisms do find lodgment, there is, in most infections, an immediate rise in the white cell count, these cells being directly involved in resistance.

At my suggestion encephalitis lethargica in the City Hospital, Fazakerley, Liverpool, is said to have been successfully treated in application of this principle by Dr. C. Rundle, officer in charge, and his staff, 39 cases being given an average of four injections each of gr. 1 of the salicylate of mercury in oily suspension. All recovered satisfactorily save one; in some the improvement is said by Dr. Rundle to have been striking. One patient who came in on the ninth day of the infection died after having had one injection.

Thirty-one cases of trachoma among Poles and Russians who were detained because of this infection at Atlantic Park, Eastleigh, Hampshire, have been treated by Dr. Frank McGee, the medical officer in charge, and by Dr. Arthur Zorab, of the Eye Hospital, Southampton, as consultant. Treatment by an induced increase of leucocytes was begun in November, 1923. In March they began to be passed as cured of trachoma by all examining officers here and in New York and in Montreal. So far there have been 25 of the original 31 cases declared cured and are now residents of the United States and Canada. These cases had from 12 to 35 injections of salicylate of mercury. Four of the remaining cases are having N.A.B. with good results, as will be told by Dr. Seager Thomas. The usual local treatment—rolling the lids with application of copper sulphate and a 1 per cent. solution of perchloride of mercury—has been used, together with the injection of salicylate of mercury, given once a week during periods of six to eight weeks. A rest was given to allow the individual to re-establish a sensitiveness to the mercury, as with each successive dose or injection the rise in the white cell count is diminished, finally becoming negligible after six or seven weeks—no increase in white cells and no noticeable change in the trachomatous lesion. This seems to me to be the logical reason for our early instruction that in the treatment of syphilis mercury must be given in series or courses. After a rest the administration of mercury was followed again in the trachoma cases by improvement, blood counts showing rapid decline in the effect of the stimulation on the production of white cells after repeated injection of the drug.

In an attempt to extend the principle of the treatment of infections by induced increase in white cells I have seen or known of rapid, certain, and satisfactory results in arthritis, asthma, bronchiectasis, pyelitis, acute otitis media, eczema, not yet diagnosed abnormalities or infections of the skin, iritis, iridocyclitis, carbuncle, and hay fever, after one to three injections each. Last spring a friend had his fourteenth recurrence of hay fever, with the conjunctivitis, congested nasal membranes, cough, sneezing, and ordinary discomfort of the infection. On the day I saw him he had used seven handkerchiefs. An injection of salicylate of mercury was given and I saw him 24 hours after. There was no evidence of any irritation about the eyes, no swelling of the nasal membranes, his breathing was clear, and he proudly showed, still folded and not used, the four handkerchiefs with which he had provided himself on leaving his home in the morning. I communicated with Dr. Zorab, who said that he had just used salicylate in two cases of hay fever with equally good results, and to better effect, for there was no return of the infection in his cases, while the infection returned in my friend in six days, though it was not so severe as at first. A second injection of salicylate was not so potent, and his discomfort continuing, on the third day of the recurrence N.A.B. was given, when he grew rapidly better and had, he said, his best year for 14 years.

The belief that novarsenobillon and quinine derived their potency from their power to stimulate the production of white cells became so strong, that I consulted Dr. Seager Thomas at his laboratory. He will tell of his findings.

The promise of a satisfactory extension of the principles seems great in many directions, but experience can here be the one guide to an opinion.

Addendum by Dr. G. R. SEAGER THOMAS.

There has recently been a fairly considerable use of salicylate of mercury in a more or less empirical manner for the treatment of a variety of conditions, notably trachoma, staphylococcal infections—e.g., furunculosis—and encephalitis lethargica. The major portion of this therapy has been somewhat spasmodic and disconnected, but for many years in several quarters of the globe salicylate of mercury has been used consistently in many different types of case by Dr. Burr Ferguson of the U.S. Health Service. Dr. Ferguson's communication above refers to his experiences in this direction and to that article these notes are simply a pathological postscript.

His successes with mercury, to which he refers as one of the "specifics," led Dr. Ferguson to attempt the substitution of novarsenobillon or alternatively quinine for the mercury. His results need not be again described here. Finding that similarly satisfactory effects followed the use of these drugs also, he felt that an hypothesis to explain provisionally the rationale of the treatment would be of interest and value. His observations led him to the belief that these drugs owed their efficacy to a power of artificially inducing leucocytosis.

This view led to a certain amount of amicable controversy, and the writer, on being offered the opportunity of investigating the leucocyte variations in a number of subjects, considered that it would be only sensible to test Dr. Ferguson's hypothesis by a rigid application of the scientific method. The first stage—recording of observations—is supplied by Dr. Ferguson's own and other medical men's records of the cases. The second stage—formulation of a provisional hypothesis—is supplied by Dr. Ferguson's suggestion that the drugs act as inducers of leucocytosis. It next becomes necessary to perform a number of carefully controlled experiments, record the results, and see whether these are in accordance with the provisional hypothesis. The work is in

active progress now, and an indication of the results obtained is the purpose of this communication.

Should the results obtained support the provisional hypothesis, or a modification of it, then we can be said to have a theory of the action of these drugs, and such a theory should be capable of application (1) satisfactorily to explain apparent exceptions, and (2) accurately to predict the influence of one of these drugs upon the blood picture in a given case. Such applications of the theory, if successful, constitute scientific proof of its correctness. Both these exercises have been performed.

The reason for publishing any of the laboratory findings at this admittedly early stage of the investigation may not at once be clear. It has been reported that several laboratories in Germany are busily engaged in the search for an agent for the artificial induction of leucocytosis. It seemed therefore not unwise to record the fact that an investigation into just such properties possessed by well-known drugs had already been initiated. It is not claimed that the necessary experiments, observations, and correlation of the results are as yet in anything but the very earliest stage.

I have myself seen a number of successful cases, most of which were treated by novarsenobillon (there was no reason to suggest syphilis, nor was the drug administered for this disease). A series of cases of trachoma was amongst those which made the most vivid impression. There is, however, no intention to refer to the purely therapeutical aspects of these cases here, as favourable testimony from this point of view is forthcoming from clinicians.

An indication of the hæmatological results is given below:—

TABLE I.

Subject.	White blood cells per c.mm.		Subject.	White blood cells per c.mm.	
	Before intramuscular administration of 1 gr. mercury salicylate.	24 hours later.		Before intramuscular administration of 7½ gr. of quinine bihydrochloride.	24 hours later.
D. M.	7,000	20,400	J. M.	11,000	14,000
M. P.	8,000	17,000	C. P.*	9,300	12,700
M. C.	18,600	21,800			

* 5 gr. only given.

TABLE II.—*Effect of Intravenous N.A.B. (Dose varies from 0·3 to 0·6 g. according to Size of Subject).*

Subject.	Before N.A.B.	24 hours later.	7 days later.*	24 hours later.	7 days later.
	White blood cells per c.mm.				
B. F.	7,200	10,200	9,800	—	—
J. M.	10,400	22,800	21,800	—	—
C. P.	7,200	10,200	9,300	—	—
K.	7,600	10,600	12,400	17,100	14,600
B.	8,800	13,000	13,800	14,400	—
R.	7,900	12,500	10,800	13,200	—
G.	7,400	12,600	14,000	10,600	—
M. G. ..	10,000	14,000	12,000	—	—

* Second injection given on seventh day.

It will be seen from the tabulated results that mercury, quinine bihydrochloride, and novarsenobillon are powerful inducers of leucocytosis. The investigation with regard to quinine was not continued for the following reasons: (1) The injection is distinctly painful, and (2) it appeared to have no advantage over mercury or N.A.B.

Previous leucocyte counts carried out for Dr. Ferguson (at other laboratories) have shown that a tolerance to mercury is somewhat rapidly established, the leucocyte count returning early to normal and being comparatively little raised by repeated injections. In novarsenobillon we have an agent practically painless in administration and at least as safe as either of the others in suitably selected cases. Its first effect upon the leucocyte count is at least as marked, its period of maintained leucocyte increase much longer, and its effect at repeated injections very much greater and more constant than in the case of the mercury and the quinine. There seems to be very little doubt that in novarsenobillon and its variants we have a very constant and dependable agent for inducing leucocytosis, where this is desirable.

One of the apparent exceptions was a case in which the count before injection of novarsenobillon was 17,000 per c.mm. and 24 hours later had dropped to 12,600 per c.mm. The result, however, had been anticipated as one of two probable results of the injection. The subject was a patient who had a very large acute "boil." It was anticipated that either (1) the "boil" would discharge completely within a few hours of the treatment, thereby rapidly removing the cause of his natural leucocytosis, and producing a drop in the count, which, however, would be artificially prevented from returning to normal; or (2) he would have added to his natural a further artificial leucocytosis if the "boil" still persisted as a focus of pus under pressure, and yield a count somewhere near 25,000.

In order to explain sundry cases where the customary relief does not occur I have suggested a modification of the simple "leucocytosis theory" of Dr. Ferguson. It seems but reasonable to believe that however successful one may be in inducing leucocytosis, the army of phagocytes will be ineffective if unattended by munitions of war, the multifarious "antibodies," and it is now proposed to observe the effect of the administration of novarsenobillon to patients whose specific antibody formation has been stimulated by autogenous vaccines. It appears to me a more sound rationale to bend to one's purpose not the cellular alone, but also the humoral factors of immunity.

At first differential white cell counts were made, but it was soon seen that with very slight exceptions (in one or two cases there was slight eosinophilia, in others increase of endothelial cells and occasionally some polymorph increase) the variations in the relative counts remained within the limits of the normal. The differential counts were then discontinued.

These investigations will take time, but in due course the complete record will be to hand. It appears to be a promising field in which laboratories having at their command a greater abundance of material than is at our disposal here could find a very valuable sphere of activity.

NORTH STAFFORDSHIRE INFIRMARY.—On June 5th the King, who was accompanied by the Queen, laid the foundation-stone of extensions to this hospital at Stoke-on-Trent, which serves a population of close upon half a million. A large addition is being made to the nurses' home and a new ward unit provided; the preliminary work for further enlargements is also being done. The cost will be £150,000, and it is claimed that when the enlargements are completed the North Staffordshire Infirmary will be the largest hospital outside London. It dates from 1815, when it was established at Etruria, but it descends also from a dispensary started in 1802. It was rebuilt on the present site at Hartshill in 1869, the foundation-stone having been laid by King Edward when Prince of Wales.

LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE.—Dr. Edward Hindle, Milner Research Fellow of the school, has been granted leave of absence for two years in order to undertake, in conjunction with Major W. S. Patton, an investigation on the transmission of kala-azar in North China, on behalf of the Royal Society. During the past six months Dr. Hindle has been working on the biology and life-history of spirochætes, and has investigated the prevalence of leptospira in the neighbourhood of London. He has been successful in finding these organisms not only in Thames water, but in tap-water, and many other sources. On his way East Dr. Hindle is calling at Calcutta in order to see the work of the Indian Kala-azar Commission. Whilst in China the Kala-azar Commission of the Royal Society will have a central laboratory at the Shantung Christian University, Tsinan, where Dr. Hindle expects to arrive in the autumn.

Medical Societies.

SOCIETY OF MEDICAL OFFICERS OF HEALTH.

FEVER HOSPITALS MEDICAL SERVICE GROUP.

AT the annual meeting of this group, held at the Society's house in London on May 22nd, a discussion took place on the

DICK REACTION AND THE SERUM TREATMENT OF SCARLET FEVER.

Dr. E. W. GOODALL (N.W. Fever Hospital, Metropolitan Asylums Board), Vice-President, occupied the chair.

Dr. R. A. O'BRIEN (Wellcome Physiological Research Laboratories), in opening the discussion, said:—

I should like to give some short account of what progress has been made in England in the application of the results obtained in America, notably by the Dicks, Dochez, Park and Zingher. But I would prefer to draw your attention at greater length to the difficulties ahead and the urgent problems awaiting solution before much progress can be made.

Progress in England.

Dick Test.—The results obtained in England, such as the series published by Okell and Parish in July, 1924, and April, 1925, and the longer series by Ker (THE LANCET, 1925, i., 230), as well as a number of shorter series by various observers (over 200 cases, 70 per cent. being positive to the Dick reaction) agree in the main with American findings. Some 60 per cent. to 90 per cent. of cases of scarlet fever if tested during the first two or three days of the disease give a positive response. If tested two to five weeks after the onset of the disease some 70 per cent. to 90 per cent. of patients have developed a sufficient immunity to give a negative reaction to the Dick test (100 cases, 89 per cent. negative).

Schultz-Charlton Test.—Although the observations made in England up to the present are few in number, the results agree broadly with the American findings. The serum of a patient taken some weeks or more after the end of the disease will, when injected intradermally into the rash of a scarlet fever patient within 60 hours of its appearance, blanch an area of from 10 to 40 mm.; this blanching appears in from 6 to 12 hours and lasts usually from 24 to 48 hours. We have immunised several horses with toxin and streptococci, and the serum of these horses when injected intradermally also causes the characteristic blanching in rashes due to scarlet fever but not in rashes due to other diseases. In England this blanching has been obtained in some 70 per cent. of over 100 cases tested.

Active Immunisation.—Apparently very little work has been done in England. We have injected many minimal skin doses into ourselves without producing any troublesome reaction.

Passive Immunisation.—Apparently 5 to 10 c.cm. of our horse serum injected intramuscularly will convert a "positive reactor" into a "negative" overnight. The serum should therefore efficiently protect children unwittingly exposed to infection.

Treatment.—The serum of several horses has been used therapeutically in some few dozen cases. The results can be characterised broadly as promising, and in some instances as very promising. The number is far too small to enable one to draw any satisfactory conclusions, but the evidence is such as to lead us to commence the immunisation of a larger number of horses so that sufficiently large supplies of serum will be available for a test carried on over many months.

Difficulties and Discrepancies.

The foregoing is a short account of what has been done. I should now like to deal with the difficulties and discrepancies.

Dick Test.—Here, as in all the work, we are greatly hampered since there is no means yet discovered of testing a given toxin in the laboratory. When we speak of the Schick test we can be certain that results obtained in half a dozen different countries are reasonably comparable, but with the Dick test this cannot be so readily assumed. There is little doubt that if an accurate method of titration were discovered it would be found that some of the Dick toxins in use for the test in various localities are two or more times the strength of those used elsewhere. We have tried all the obvious animals as well as white goats and kids and grey horses, cow's udder, abdomen of white sucking pig, the axilla of white sheep and lambs, but can find no practical method of testing in the laboratory. All toxins, therefore, must be tested on human beings. We have injected ourselves in the laboratory many times until we no longer give a satisfactory positive reaction. In America and France large numbers of people are available, but in England unfortunately they are not. How the difficulty is to be solved I do not know. It is a very serious one. Here, perhaps, I may be allowed to express the deep appreciation of myself and colleagues for the unlimited and prompt generosity of the whole of the American workers in putting at our disposal information and materials. We have tried to compare our toxins with those in use in America, but I know from American experience that a toxin may easily be labelled with half or double its real value when tested on a small number of people. So far as we can determine, the filtrates Dr. Okell has made are at least as strong and probably stronger than the average American toxins, and seem to cause fewer pseudo-reactions. At present we must go on collecting the observations made by a small number of medical officers and be prepared to alter our view about any given toxin whenever the evidence indicates. We have found recently an indication that a toxin with which Dr. Okell gets quite satisfactory positive reactions in the laboratory is giving a very low percentage of positive reactions in certain hospitals, mostly when testing patients in the first few days of scarlet fever, but also on patients not suffering from scarlet fever. It may be that transient positive reactions are being missed. It is puzzling that, during the same period, with the same toxin dilution from the same stock, satisfactory positive reactions are being got in other hospitals. It may be that it will be found necessary to use a given strength of toxin for testing healthy normal subjects, and a toxin several times as strong for testing scarlet fever patients in the first few days of the disease. Such a course would lead to great confusion and difficulty in keeping records, and one can only hope that it will not be found to be necessary. At present we have two dilutions being tested clinically, 1/6000 and 1/1000.

Schultz-Charlton Test.—We are naturally mainly interested in the blanching produced by the serum of immunised horses. In this test the American and Continental workers inject into the skin 0·5 to 1 c.cm. of serum. We are using 0·2 c.cm. The injection is much less troublesome for the patient and apparently gives satisfactory results, but we have not had enough experience to say which is the best quantity to use. Apparently some 75 or 80 per cent. of cases give an easily recognised blanching whether the serum be used undiluted or diluted even 200 to 500 times, but it is curious that in most if not all of the series done in England a small number of the patients suffering from typical scarlet fever have failed to show any blanching, though the serum has been injected intradermally in the very early stage of the disease. The most obvious suggestion is that there are two types of scarlet fever—A and B. It would be easy in a comparatively short time to confirm or refute this hypothesis. My own feeling is that it will not be confirmed, but evidence to-day is too slight to warrant anything more than a guess. We are collecting the streptococci from these "non-blanching" patients, and making toxin to see if one can demonstrate any difference from the ordinary toxin. If the result of the Dick and Schultz-Charlton test in these patients is known, and also the effect of their serum (taken when convalescent) in producing the blanching on other cases of scarlet fever, it will be easy in a relatively short time to decide the question.

Active Immunisation.—We have made toxin for active immunisation, and Dr. Okell has formalinised some toxin by the Glenny-Hopkins technique, but we have no group of people available on whom to test the immunising efficiency of these toxins. The results obtained recently in America already almost justify the conclusion that by testing and immunising the ward staffs in scarlet fever hospitals we can reduce attacks of scarlet fever amongst nursing staffs as satisfactorily as now, in many diphtheria wards, diphtheria amongst the nursing staff has been reduced almost to nothing. One point of importance here is that in the process of immunisation there is but little danger. In diphtheria a careless miscalculation has in rare cases caused diphtheritic paralysis or death, whereas the injection of very large doses of scarlet fever toxin into human patients has been followed by nothing more than a feverish attack lasting 24 to 72 hours with complete recovery thereafter. There need apparently be no hesitation in arranging for the immunisation of suitable people.

Treatment.—The results hitherto obtained are encouraging; it is too early to say more yet. But the great difficulty that faces us here is that of standardisation. There are two possible methods—the official U.S.A. method and the rash-blanching method.

Official U.S.A. Method.—In principle this method resembles the titration of diphtheria antitoxin by the intradermal method in guinea-pigs. Mixtures are made each containing a fixed dose of toxin and a dilution of the serum under test; the various mixtures are injected intradermically. If a flush—i.e., a positive reaction—occurs, obviously more serum must be used. This is continued until a balance is reached. So far as our experience of tests carried out on ourselves goes, the process is reasonably satisfactory and enables one to get an idea of the value of a serum. This value, of course, is much less accurate than in the case of diphtheria antitoxin, but still serves as a valuable measure of potency when arranging for the treatment of human beings. The only trouble is the obtaining of a supply of Dick positive people on whom to carry out the tests. The process of testing is practically painless and apparently free of danger, so that when suitable opportunity occurs there need be but little hesitation in carrying out the test, which is also a test of the patient's immunity to scarlet fever. The tendency of a number of tests would be to immunise the patient against scarlet fever after which, of course, he would be useless for this method of test. The second method is the one that is being used in England in which the serum is tested intradermally on scarlet fever patients before its therapeutic use. Into the rash is injected 0·2 c.cm. of dilutions of the serum proposed for use until the greatest dilution which will still produce blanching is found. We have compared our own horse serum with samples very kindly sent us from American colleagues; the serum in use in England will usually blanch in a dilution of 1/200 or even 1/500. The number of comparisons yet made is very small, but they tend to show that our serum has a value at least equal to the American serum. This method of testing appears to be more practicable under English conditions. Unfortunately, no one can as yet tell us definitely whether this method gives the same relative values as the official U.S.A. method. Until this problem of standardisation is solved no great improvement in the potency of the serum available can occur. We are using for the immunisation of horses the filtered toxin and the cocci themselves. We have applied the ordinary methods of concentration on a small scale to this serum, but we have not up to the present been able to form any idea whether a concentration of the scarlet fever antitoxin does result. I have little doubt that it does, for concentration has been used on a fairly large scale in America, but so far as our own work is concerned we are still without definite information.

Experience at a M.A.B. Hospital.

Dr. F. H. THOMSON (N.E. Hospital, Metropolitan Asylums Board) said that a number of attempts had been made to obtain a curative serum for scarlet fever. In 1896 Marmorek used an antistreptococcic serum, and later Aronson and Moser did the same. In 1897 Weissbecker used the blood serum of convalescent scarlet fever patients, but apparently in too small doses to be of value. About 1910 Reiss and Jungmann used convalescent scarlet fever serum in doses of from 40 to 100 c.cm., in a few cases with good results. In 1914 Zingher reported good results from the intramuscular injection of whole blood taken from convalescent scarlet fever patients. In 1923 Dr. Dochez attempted to immunise a horse by injecting agar into the cellular tissue of the neck, and when the agar had solidified, the hæmolytic streptococcus, thought to be the cause of scarlet fever, was introduced into the centre of the mass. Some six months later the serum of the horse was sent to Blake, who reported very favourably on its curative properties. However, Zingher, in a paper read before a joint meeting of the Association of Pathologists and Bacteriologists and the Association of Immunologists at Buffalo on April 17th, 1924, said that the results noted at the Willard Parker Hospital, New York, had been encouraging, but not as striking as those reported by Blake and his associates. Somewhat later the Dicks attempted to produce an antitoxic serum by immunising a horse with their toxin.

Antiscarlatinal serum as now prepared by the Department of Health, New York, as well as under the direction of Dr. Dochez had, Dr. Thomson was informed, been so successful that orders had been given to use it as a routine in all patients diagnosed as scarlet fever and admitted at the Willard Parker Hospital. Further, the medical staff and the research laboratory had been so convinced of the specificity of this mode of treatment, and its result in reducing the death-rate and diminishing the likelihood of complications, that they felt it no longer necessary to carry out control series of serum and non-serum cases. The more important benefits arising from the use of antiscarlatinal serum in the United States were the more rapid fall of the temperature, the statement of the sufferer that he so quickly feels his condition to be improved, and the more rapid fading of the rash.

It was well to note, Dr. Thomson said, that scarlet fever in the United States had recently been, and no doubt was now, a more fatal disease than in this country. As an indication of this, he gave the total number of cases admitted, and the death-rates during the five years 1919 to 1923 at the Willard Parker Hospital, and at the North-Eastern Hospital of the Metropolitan Asylums Board.

Year.	Willard Parker Hospital.		North-Eastern Hospital.	
	No. of cases.	Death-rate per cent.	No. of cases.	Death-rate per cent.
1919	526	5·9	1404	0·98
1920	614	12·0	2955	0·87
1921	1316	8·4	3300	0·94
1922	895	8·2	1536	1·95
1923	589	4·6	1098	1·8

In February last, through the kindness of Dr. R. A. O'Brien and later of Dr. A. T. MacConkey, he was enabled to commence the treatment of scarlet fever with sera prepared by them. The difficulty was to find suitable cases on which to test the curative value of the serum, and most of the cases selected could not be called other than mild attacks, though all were not so. Thus from the point of view of testing the value of the serum he was at a definite disadvantage when compared with New York. Again, the paucity of cases suitable for this treatment at his hospital rendered it impracticable to compare the results with a series of non-serum cases. This form of control, however, with scarlet fever so mild as it is, would have been of negligible value. With regard to the statement that the patient felt distinctly better after the administration of the serum Dr. Thomson had found

difficulty in getting at the facts, for the average patient on coming into hospital was placed in conditions of comfort which did not exist at his home, and this helped him to regard his condition as considerably improved. Again, most of the sufferers were young children who did not necessarily give expression to facts, and who were influenced by the customary suggestion of the nurse to say "I am better, thank you, doctor." On the other hand, one of the children treated insisted that he was no better for some days, but this was obviously untrue.

Observations on Thirty-seven Cases.

"Up to the 6th of May," said Dr. Thomson, "I had treated 37 cases. These were the cases admitted with more pronounced rashes, and in all the serum was administered intramuscularly. At the commencement I gave 20 c.cm. until Dr. A. T. MacConkey kindly told me that Dr. Dochez gave 40 c.cm., when I adopted the latter dosage. Of the 37 cases 13 were on the first day of the rash, 23 on the second, and 1 on the third. In drawing deductions I find it safer to date from the commencement of the rash, since that can be more accurately ascertained than the date of the onset of the disease, which is often unreliable.

"When the antiscarlatinal serum was given on the first day of the rash its average duration was actually less than in those treated on the second day. Some rashes, whether treated on the first or second day, seemed to be affected but little if at all, one or two faded unduly rapidly, and several showed a lessening of rash intensity in about 24 hours from the time of the injection of the serum. However, even when the rash intensity was lessened it did not usually fade rapidly afterwards. Indeed, in one apparently severe case the rash lasted a further six days. The effect of the treatment on the rash varied greatly, just as I have found in the intradermal extinction test. I have had one or two cases of clinical scarlet fever which failed to give a local blanching reaction on intradermal injection of a serum which reacted well in others, and one of them might be described as a classical case of scarlet fever.

"The effect of the serum treatment on the temperature of the patient in the type of scarlet fever we are dealing with was, on the average, not very marked. After studying the temperatures of a considerable number of non-serum treated cases, I am disposed to think that the antiscarlatinal serum treatment frequently results in a slightly more rapid fall and that the temperature falls to normal somewhat earlier.

"A few adult and adolescent patients have positively assured me that they felt distinctly improved in about 24 hours after the administration of the serum. There were a few cases of ulceration of the tonsils and nasal discharge amongst the cases treated, and one of ulceration of the soft palate, and these seemed to follow a more benign course than I would have expected, but they were too few in number to draw any conclusion from. It is worthy of note that in a high proportion joint pains followed the use of the serum. Perhaps this might be expected since rheumatism, though not a frequent complication of late years, was common when the disease was more severe.

"In one case I was much impressed, for when I first saw her I considered she was at the beginning of a severe attack; she had a deeply tinted rash and considerable faucial œdema. She had a toxic appearance and said she felt very ill. In about 24 hours after treatment she had lost her toxic appearance, said she was very much better, also looked so, and her temperature had fallen four degrees. Three days later she developed ulceration of the tonsils accompanied by nasal discharge which lasted for a few days. Her rash persisted for seven days."

He was well aware, said Dr. Thomson, that deductions could not be drawn from a few cases, and that an apparently severe case of scarlet fever might unaided rapidly improve, but he was favourably impressed with the very little he had seen of the antiscarlatinal serum treatment. One or two patients in whom improvement might have been expected from this treatment did not bear out the expectation. The same serum when injected intradermally often produced differing local blanching reactions and occasionally failed altogether. Hence the need of more information and of an answer to the question: Are we dealing with more than one type of scarlet fever and perhaps with mixed infection as well?

Discussion.

Dr. S. M. COPEMAN, F.R.S., said that as a member of the Scarlet Fever Committee of the Ministry of Health he had visited New York and had been exceedingly impressed. Dr. Zingher had inoculated a large number of cases prior to his arrival in order that he might have an opportunity of seeing every variety of the Dick test. But there was a vast amount of work still to be done, for the Dick test in certain respects was quite unlike the similar tests in diphtheria. It was not yet absolutely certain what was the organism concerned in scarlet fever, and no method had been found to carry out tests on laboratory animals. Some time ago it was decided by the Ministry of Health to investigate on a large scale; amongst other centres, Liverpool and Manchester promised full coördination with the Ministry's Pathological Laboratory. A meeting of all concerned had taken place at the Government Laboratories, and a considerable amount of work had been carried out on the bacteriological side, and not in relation to the operation of the Dick test or the possibility of active treatment. He was greatly interested in the protection of nurses and residents in infectious disease hospitals, and with regard to diphtheria he had always urged that nurses should not be allowed to go on duty in the wards until Schick tested and, if positive, immunised. He hoped it would be possible before long to issue a definite suggestion to that end, and also in the same way with scarlet fever.

Dr. C. C. OKELL (Wellcome Physiological Research Laboratories) said that with regard to the standardisation of the Dick toxin there was great difficulty in matching two toxins. They had made filtrates not only from the Dochez strain but from the Dick strain, and from one or two strains of their own, but outside work had been restricted to the Dochez toxin. The toxins were not all of the same strength, but could be made so by suitable dilution, and it could probably be claimed that the Dick tests being carried out in the several countries were the same. Doubtless everybody wanted to know what was the correct dose—the dose that would divide patients accurately into two groups, those who would get scarlet fever and those who would not. That point had not yet been settled, and only much experience would provide the answer. Evidence, of course, was rapidly accumulating which showed that the Dick negative did not take scarlet fever, but light still had to be thrown on the meaning of the partial reactions, and whether or not the people who gave them were susceptible to scarlet fever. Dr. Okell instanced several specific cases of positive reactions, including that of a nurse, the only Dick positive in a group, who before she could be got out of the ward developed scarlet fever. One thing might help to clear up certain difficulties—viz., the study of the disease with a serial Dick test day after day during its course. Such a test done in parallel with the Schultz-Charlton would give valuable information.

Dr. D. S. SUTHERLAND (Monsall Hospital, Manchester) stated that they had done 420 Dick tests in the first three months of the year in 127 cases in successive days, taking groups of cases on the first day of the disease, the second, third, fourth, and so on, and had found that the percentage of positives was considerable in the first two weeks of the disease, and that thereafter there was a gradual decrease. After the twenty-eighth day no positive results whatever were obtained. It was found that the reactions were rather subtle things, and a sharp look-out had to be kept for the tests. Dr. Sutherland gave details of an interesting observation. In a large ward 50 cases of diphtheria had been exposed to a septic scarlet fever case before it was removed. The whole ward had been Dick tested, and 15 patients gave a positive result, and it was a notable fact that the scarlet fever picked out throughout the ward the Dick positive cases, including the doctor in charge. In conclusion, Dr. Sutherland said that they had recently been using convalescent serum in septic cases with very beneficial results.

Dr. J. C. BLAKE (N.E. Hospital, M.A.B.), speaking of the Schultz-Charlton test, remarked that the number of cases done had been small owing to the few admissions and the mildness of the rash. Owing to

the difficulty in reading the result, it had only been employed where the rash was well marked or likely to develop. In 29 cases injected, 7 showed no blanching. In each case several dilutions, varying from 1–10 to 1–500, were used. One case only showed blanching with a 1–500 dilution, 6 with 1–300, and the remainder all showed blanching with dilutions from 1–10 to 1–300. Using 1–10 the blanching persisted right up to the time of the rash, and even after the rash had faded. Of the 7 cases that had shown no reaction, 3 had good rashes which faded within 24 hours of admission, and 2 also had good rashes which faded on the third day after admission. The average time for blanching to occur was 14 hours 20 minutes, the shortest period being 3 hours 20 minutes, and the longest 46 hours 20 minutes.

Dr. W. MAIR (Research Pathologist, M.A.B.) observed that it was curious that serum which blanched the majority of the rashes failed to blanch the individual rash. There was unfortunately no really satisfactory method of measuring either the toxin or the antitoxin. Another point of interest was the question of the period at which the Dick test became negative.

Dr. W. A. LETHEM said that at Liverpool he had found his negatives increase very largely as the period of convalescence went on, but had nevertheless obtained a small group of Dick positives where he would have expected Dick negatives. This he had attributed to a temporary lack of immunity at that period.

The CHAIRMAN said that at the North-Western Hospital not very much had been done, but so far as they had gone the results of the Dick test did not agree at all with one another, and apparently a good deal depended upon the toxin used. One of 1–6000 at the North-Western Hospital failed almost completely, though he understood it had been successful elsewhere. He had been glad to note the reserved tone of the discussion, for after all they were not so sure of their ground as with the Schick test. A question had been raised as to the number of nurses in the Board's institutions who had caught scarlet fever. Up to 1914 the Metropolitan Asylums Board had published the number of cases of all infectious diseases contracted by their staff, and from those figures it would be easy to calculate the incidence up to that date. Since that year it was doubtful if the information was available. Records were, however, kept at the several hospitals, and it would be possible to obtain the data if necessary. The cases of scarlet fever seen nowadays were so mild that it was better to leave them alone, and that was one of the reasons why he had not himself yet tried the methods under discussion. He had not had for some months a really serious case of scarlet fever. One also had to remember that in the past sera had been tried with varying results. In typhoid fever, for instance, some curious results had been obtained in the use of serum.

Reply.

Dr. O'BRIEN agreed that most scarlet fever cases that occurred in London were very mild, and that one would hestitate to add in any way to a patient's discomfort in such circumstances. At the same time it would be well to bear in mind the possibility of complications being reduced in severity by the use of the system. In concluding, Dr. O'Brien gave particulars of two interesting instances. In the first, eight cases had been sent into hospital diagnosed as scarlet fever. They did not appear to be scarlet fever to the admitting physician, who had them Dick tested. Negative results were obtained in each case; they were put in a scarlet fever ward, and did not get the disease. In the other instance, six positives were obtained and up to that day four had caught scarlet fever.

Dr. THOMSON said that, as a matter of fact, none of the cases in his hospital had been severe, but that was not the point. Scarlet fever varied in severity over long periods, and not knowing when it would again become serious they should be prepared to deal with it.

ROYAL SOCIETY OF MEDICINE.

SECTION OF OTOLOGY.

A MEETING of this Section was held on June 6th, Dr. KERR LOVE, the President, being in the chair.

Artificial Aids to Hearing.

Mr. J. F. O'MALLEY, in opening this discussion, said the instruments which had been introduced to aid the deaf could be classified into the mechanical and the electrical. Among the former were the ordinary speaking tube for carrying sound to the listening ear, sound collectors on the same principle as sea shells, some of which were worn as artificial auricles, banjoes, trumpets, &c., either straight or coiled. The electrical aids were of two types: the ordinary one was the battery transmitter and receiver, and the regulator, the effect of the instrument being capable of intensification by moving an arm on a rheostat. The receiver was supposed to act by air conduction and bone conduction, but one form acted by bone conduction only, and one make of instrument conducted sound by bone conduction only, being placed against the mastoid. An apparatus had also been devised for lip-reading. By combinations of the various devices it was possible, he said, to make 90 different types of instrument. For moderate degrees of deafness he considered the mechanical aids were the most valuable and the least troublesome; while for the more intense degrees of the disability the electrical were the better.

Illustrations of typical examples were projected on to the screen and demonstrated by the speaker.

Mr. W. M. MOLLISON said that he had recommended these aids very little; he usually sent people requiring them to an electrical expert. His general experience was that patients with high degrees of middle-ear deafness and otosclerosis were almost always helped by some form of electrical instrument. Cases of internal-ear deafness and short bone conduction were seldom helped by them, though they were sometimes. A useful rough indication in advising patients what to get was to ascertain, by means of the monochord, the highest pitch they could discern. Many could not hear the monochord at 30 to 40 cm., but yet could hear it well through the bone, and these would practically all get some benefit from an instrument. Small cornets worn under the hair were very useful.

Dr. W. H. KELSON asked whether members had any experience of cases of deafness who were made worse by the continual use of these instruments. He had heard such complaints, which included headache. Possibly over-use produced an inflamed organ.

Mr. HERBERT TILLEY spoke of the great help in hearing sometimes given when there was a large perforation of the drum by placing in the ear a small pledget of wool soaked in liquid paraffin. He did not advise a gutta-percha disc, as it was liable to become foul and septic. The wool plug could be used gradually at first until the patient was accustomed to it.

Mr. A. R. TWEEDIE said Bárány considered that the sound proceeded through the foramen ovale and then through the helicotrema and the foramen rotundum, and that hearing was due to excursions of the round window with excursions of the oval window. This pre-supposed that there must be an exposed and a tolerant middle ear. If a paraffin or mercury droplet were run into the external auditory meatus and the head tilted backwards to enable the droplet to pass into the fossa rotunda, so that it took the place of the normal droplet of mucus, it ensured the sound waves going only one way, the correct way.

The PRESIDENT said the chronic non-suppurative conditions of the middle ear constituted one of the reproaches to otology. Great advances in the surgery of the ear had been made in the last 30 years, but practically none in this particular part of the field. Electrical aids to hearing were far too expensive for most people, and often their effect was uncertain. Mere increase of the loudness of the voice as heard was not sufficient, as the voice was compound, and no

instrument intensified it over its whole range. Success had been partially attained by the Western Electrical Company, of New York, who had elaborated an apparatus on the principle of the Ordeon amplifier. In middle-ear cases the difficulty was to increase the value of the low tones without increasing the high tones; and in the internal-ear type of deafness the trouble was to increase the high tones without increasing the low ones. The acousticon had been tested for some days on 60 or 70 Glasgow semi-deaf school-children, and the results were disappointing. He agreed with Mr. O'Malley that there was nothing at present more efficient than the hearing tube. He thought the Section should do all possible to protect inexperienced patients against the abuse which existed in connexion with foisting costly instruments for which much was claimed. Members should lay down the condition that patients should not be asked to buy these instruments without a thorough test being carried out. He thought that occasionally such a plug as Mr. Tilley mentioned had re-established discharge in a dry ear by acting as an irritant foreign body.

Mr. SYDNEY SCOTT referred to a committee which was appointed many years ago to investigate aids to hearing, and said that committee could not then examine the Marconi instrument, though some members had done so since. The condition known as otosclerosis was usually benefited by electrical aid. Patients with senile deafness, who could hear low tones but could not analyse them well, and had lost very high tone perception, heard better with a plain speaking tube. He had never yet seen a child whose middle-ear deafness was improved by the use of the acousticon. He agreed that a pledget of paraffin-soaked wool inserted in the ear was very liable to set up suppuration, and he had warned patients of that risk. This pledget could be used in the case of very relaxed drums, in which no perforation was present at all.

Sir JAMES DUNDAS-GRANT said that if possible the mechanical devices should be used rather than the electrical, though in the matter of elegance the latter deserved much consideration. The banjo-shaped instrument was the one he found most acceptable as a rule. Some tubes for the purpose were of uniform bore, but they should always be of a gradual taper. In some continental statistics dealing with 368 patients, 44 per cent. derived most help from ear-trumpets and 45 per cent. from electrical apparatus. Only 19 per cent. of patients with internal ear deafness liked electrical apparatus. The cotton-wool drum, which was the idea of Mr. Yearsley, was an invaluable aid. In the intervals between wearing the drum he recommended the application of a little dilute alcohol as a precaution against any return of the discharge.

Prof. BURGER, of Amsterdam, said that in the schools for the semi-deaf in that city a valuable instrument was a megaphone with small modifications.

Mr. F. J. CLEMINSON said he was largely in agreement with Mr. O'Malley on this subject. Patients who had senile deafness found difficulty in separating words heard, and the ordinary apparatus did not help them in this respect. But an instrument projected by Myrocwitz largely succeeded in separating the words without unduly magnifying their intensity. The instrument could be held in the hand, it was small, and certainly clarified speech. He had used an artificial drum in one case only, and it was a very great success; it had been worn daily for nearly five years, and there had been no suppuration.

Dr. J. S. FRASER said his experience was that the long black hearing tubes were the best form of apparatus available for very bad cases of nerve deafness, though he doubted whether they gave much more benefit than that obtained from placing the curved hand behind the ear. In otosclerosis the auricles made by Hawksley were very good, also in cases with a cicatrised tympanum. Most makers refused to allow prospective purchasers a fortnight's trial, which was a hardship on the patient, as the instrument might not suit his case.

Mr. H. J. BANKS-DAVIS spoke of a patient who derived great benefit from placing a small piece of bacon rind in his ear, the amount of fat on it apparently affording the needed consistency. He heard so well with this, as the speaker could testify, that his deafness did not worry him.

Mr. R. GRAHAM BROWN (Queensland) could not say much in favour of the acousticon. His custom with patients was to tell them to go to the instrument maker and try apparatus for themselves, and if a fortnight's trial gave satisfaction they could buy the instrument, but he would not himself take responsibility in regard to them.

Mr. LAWSON WHALE said he found that the people who were made worse by the use of electrical aids were those who had tinnitus, and this was aggravated by the instrument. All makers should be compelled to allow trial before purchase.

Mr. SCOTT STEVENSON said some of the machines on the market were bad from the standpoint of physics. Bell discovered that the vibrating diaphragm was the best means of conveying the human voice, and the speaker thought a good means of aiding these patients would be by an adaptation of the microphone, which was a very primitive instrument in the light of the great advances in physics generally in the last half century. He was in the habit of telling patients that they were not likely to get much more benefit from anything than from the ordinary trumpet-shaped tube.

Mr. R. T. WORTHINGTON said all were agreed that mechanical aids were the most effective, but he thought research would produce an electrical apparatus superior to any other. He had a deaf patient who was very anxious to use the wireless apparatus, and she said the Brown was far the best, and it gave less distortion of upper notes than any other.

Several cases were shown and discussed, and Mr. A. CHEATLE and Mr. V. E. NEGUS demonstrated some casts of labyrinths. The debate on drainage of brain abscess was adjourned to the autumn session.

EDINBURGH MEDICO-CHIRURGICAL SOCIETY.

A MEETING of this Society was held in the Hall of the British Medical Association recently opened at 6, Drumsheugh-gardens, on June 3rd. Sir DAVID WALLACE, the President, in opening the meeting, congratulated the Association on their acquisition of premises in Edinburgh.

Mr. DAVID LEES read a communication, with six illustrative cases, on

Treatment of Syphilis of the Central Nervous System by Tryparsamide.

It was pointed out that tryparsamide did not contain so much arsenic as the arsenobenzols, but possessed more power to penetrate the tissues of the central nervous system; it also possessed a powerful stimulative effect on animal economy and resistance, together with a moderate degree of treponemacidal action. Eighteen patients had been treated, all of whom suffered from syphilis of the central nervous system to a marked degree and who had previously been under treatment with no great improvement. Patients should be prepared as for other arsenical preparations and an intravenous injection of the filtered drug carried out; 2 g. were given at the first injection, thereafter 3 g. weekly to a total of 24 g. A month's rest was then allowed, after which the drug might be re-exhibited if necessary. The use of the drug was contra-indicated if there was optic atrophy or any lesion of the optic tract, and for this reason the eyes should be carefully examined beforehand. Adjuvant treatment of "914," bismuth, mercury, and potassium iodide might be carried out if necessary. The drug with few exceptions was

tolerated well. Weight was well maintained but not increased. In many cases there was marked improvement in general health, the patients were able to carry on work (one was able to resume work from which he had been absent for some time), cerebration improved, and the power of application to work was considerably better than previously. In the cerebro-spinal fluid the cell count decreased in all cases with a decrease of globulin and a diminution, even a disappearance, of the positive Wassermann reaction; the goldsol test of Lange showed marked improvement in every case. The Wassermann reaction of the blood was not materially altered. The great point in the superiority of tryparsamide to any other method was the ease of administration without any discomfort to the patient. From the fact that it did not affect the blood Wassermann to any great extent, it would appear advisable to exhibit adjuvant therapy with salvarsan and bismuth at the same time. Tables were shown demonstrating the diminution of the cerebro-spinal fluid, Wassermann reaction, cell count, globulin, and goldsol curve, after treatment by tryparsamide, this not having occurred previously with other drugs.

Auto-Intoxication and the Nervous System.

DR. CHALMERS WATSON read a paper, illustrated by two cases, on the rôle of auto-intoxication or auto-infection in the ætiology of disease of the higher and lower nervous system. He laid stress on the limitations in the treatment of nervous disease. Diseases of the nervous system, he said, were divided into a watertight compartment and held separate from medicine in general, consequently the outlook was limited and progress would not be made till the matter was considered on broader and sounder lines.

Reviews and Notices of Books.

PHYSIQUE AND CHARACTER.

By E. KRETSCHMER. Translated from the second revised and enlarged edition, by W. J. H. SPROTT, B.A. London: Kegan Paul. 1925. Illustrated. Pp. 266. 15*s*.

THE conception of the correlation of bodily structure with mental character is not new in the history of medical science. The early enterprises of Gall in this direction were confined to the variations in size and shape of the skull, and gave rise to the practice of phrenology, but with the negation of any correspondence between the external configuration of the head with the pattern of cerebral convolution the whole schema fell into discredit. Another notable attempt was that of Lombroso, who first formulated the conception of "stigmata of degeneration," which still has a certain validity inasmuch as mental inefficiency is a manifestation of degeneracy showing itself both psychologically and physically. Recent investigations have shown that the visceral organs, particularly the endocrine glands, in their association with the autonomic nervous system, play an important part in psychological function. Consequently the psychiatrist and the psychologist are once more paying considerable attention to physical structure in relation to mental function.

The valuable portion of the book under review consists of the observations made by the author on the correlations between certain physical types and the two general mental dispositions towards a schizophrenic or a cyclothymic reaction. As is stated in the preface, a certain amount of confirmation has been derived from other workers, and providing that the cautious and critical tenor of the book is reflected in the mind of the reader, the results may prove of considerable value from the anthropological and the biological standpoints. A careful and comprehensive scheme of examination was applied, measurements of the relative proportions of the skull, facies, limbs, and trunk playing a large part in the differentiation of the types. Attention is given to any indication afforded by the condition of the skin or any organ which can be examined from the surface of the body. The age of onset of certain functional activities, such as the menses, is noted, and the time of deposition of fat. The general distribution of hair and of the subcuticular fat is mapped out. Side by side with this physical investigation are the psychological description of the subject and of any factors in the ascertainable heredity which showed a bearing on the problem.

Some 260 cases were dealt with in this way, and there emerged three main types of physique which the author terms the asthenic, athletic, and pyknic respectively. The asthenic individual is "the lean man with a skin poor in secretion and blood, narrow shoulders from which hang lean arms with thin muscles and delicately-boned hands; a long narrow flat chest, a thin stomach devoid of fat, and lower limbs which are just like the upper in character. In the average values the weight falls behind the height, and the chest measurement behind that of the hips." The athletic type is the middle-sized man with wide projecting shoulders, a well-developed chest, firm abdomen, and a trunk tapering in the lower region. The bony skeleton is heavy and the musculature is hypertrophied. This type has certain relations with the endocrine abnormalities such as acromegaly and some dysgenitalic states. The pyknic type is characterised by the pronounced peripheral development of the body cavities, the head, chest, and abdomen, and a tendency to the distribution of fat around the trunk. In distinctive cases the appearance is that of an individual of middle height, rounded figure, with a soft round face on a short massive neck; the fat abdomen protrudes from the deep-vaulted chest which broadens out towards the lower part of the body. In addition to these three main types there are several others of a mixed and dysplastic variety which occupy extreme and intermediate positions. The author finds that there is "a clear biological affinity between the psychic disposition of the manic-depressive and the pyknic body type, and between the psychic disposition of the schizophrenic and the bodily characteristics of the asthenic, athletic, and certain dysplastic types." The description of the types is full and distinctive, and the question of mixed constitution, psychological and physical, resulting from variants in the hereditary family groupings, is dealt with at considerable length. The second part of the book, dealing with the cycloid and schizoid temperaments and their incidence among average individuals and in men of genius, is less convincing.

The arrangement is good, and the printing clear. On page 126 in paragraph 3 "liable" should read "labile." It is a pity that the translator should have aimed at such a literal standard in his work, as the text does not provide easy reading. Further, the translator shows an occasional lack of familiarity with the use of technical expression—e.g., the terms "idiocy" and "imbecility," which connote congenital mental defect and should not be employed in describing demented states resulting from the psychotic disturbances of adult life.

THE STORY OF ANZAC.

Official History of Australia in the War of 1914–18. Vol. II.: *The Story of Anzac.* By C. E. W. BEAN. London: Australia House, Australian Book Company; Australia: Angus and Robertson, Sydney. 1924. Pp. 700. 28*s*.

A THRILLING story of the heroism and persistence with which Australia and New Zealand threw their young armies into a great adventure, which achieved much but failed of complete success, is here told; the failure is now known to have occurred through the inexperience in the directors, and the cross-currents of policy which have always weakened

coalitions. The volume is little directly concerned with the health problems of the expedition, to be dealt with later in an official medical history now being written for Australia by Colonel A. G. Butler. The health of the troops, it is here stated, was good until flies notably increased in May; then diarrhœa became frequent and dysentery began to cause anxiety. The food supplied comes in for criticism, and though some South African veterans declared it luxurious, there were many observers who thought it had affected the health of the army "more than any other factor, except the bullets and shells of the enemy" (p. 365). The editor's footnote adds: "It is doubtful if this opinion is sustained by the evidence," but he closes his chapter, "The fact remained that, while the soldier on the veldt 15 years before had kept fit on his half-ration, the man on Gallipoli with his whole ration fell sick." But how many other differences there were between service in Gallipoli and South Africa! At Gallipoli, as mentioned in this book, the whole area occupied by the armies was very small, scarcely extending four miles from the beach, and was always overcrowded; the soldier was rarely safe from bombardment, not even when bathing in the sea; heat, dirt, smell, diarrhœa, flies, lice, and fleas were his daily portion; he had hardly enough water to drink, let alone to wash himself or his clothes; at night to avoid shell-fire he must often sleep in a crowded, ill-ventilated dug-out; casualties were tremendous, the personal outlook sombre; there were no periods of rest, no variety, even the landscape was always the same, dominated by "the big, whale-like shape of Sari Bair" or other ridge of horrid memory; he could neither buy nor "find" any different food. So it was no wonder that (p. 801) in September Colonel Sir James Purves-Stewart found half the old soldiers in the front line had weak and rapid heart action, and recommended the troops should be rested. This was difficult to manage since the reserves were so few. Dental decay was another problem; in time dentists were acquired from Australia. The gradual development of the medical organisation of the Australian force is well described.

This book suitably depicts a wonderful enterprise.

PÆDIATRICS.

Clinique Médicale des Enfants: Affections de l'Appareil Circulatoire. By P. NOBÉCOURT, Professeur de Clinique Médicale des Enfants á la Faculté de Médecine de Paris. Paris: Masson et Cie. 1925. Pp. 371. Fr.25.

IN this second volume of Prof. Nobécourt's Clinique Médicale, dealing with cardio-vascular diseases of children, the teaching of one of the highest authorities on the subject is presented in a form which is both original and attractive. Each chapter consists of a detailed account of one or more patients, followed by a dissertation on the conditions depicted in it. A large number of different combinations of cardiac lesions are dealt with in this way, which renders a certain amount of repetition inevitable, but this is more than compensated by the vivid presentation of clinical pictures which each of these lectures conveys. The cases are illustrated by numerous orthodiagrams and charts.

The lucid and readable style of the book, as well as the high reputation of the author, will place it among the most important works in the literature of children's diseases.

FORENSIC MEDICINE.

By HARVEY LITTLEJOHN, M.B., F.R.C.S. Edin., F.R.S.E., Regius Professor of Forensic Medicine, University of Edinburgh. London: J. and A. Churchill. 1925. Illustrated by photographs and descriptive cases. Pp. 285. 15*s.*

To read this volume is to pay a visit to a well-catalogued medico-legal museum; its principal feature consists of 183 most admirable photographs of post-mortem and certain other conditions, including drowning, strangulation, burns, wounds, and infanticide. This way of demonstrating forensic medicine is a new departure, and, since there is a full description appended to every photograph, it will be found most helpful by students. Moreover, such a collection of representative and first-rate specimens must, we think, be of the utmost interest to the medico-legal expert. The volume will be appreciated by the candidate for examination in forensic medicine; it should play a part in his reading, corresponding to illustrations of dissections in anatomy and surgery. It is indeed remarkable that no such compilation has been made before in forensic medicine, for concrete examples render learning more real and knowledge more permanent.

The book is not intended to replace an ordinary text-book, since it is stated in the preface that those aspects of the subject which are not adapted to illustration have been deliberately omitted. In so far as a practitioner makes a special study of the medico-legal aspect of his many-sided practice, this volume will be of value to him, while every district or police medical officer would be the better equipped by its possession.

AN INTRODUCTION TO SCHOOL MEDICINE.

By H. LESLIE CRONK, M.A., M.D., D.P.H. Cantab., Assistant County Medical Officer, Lancashire. London: H. K. Lewis and Co., Ltd. 1925. Pp. 236. 7*s.* 6*d.*

"THE school is the link between the intimate sheltered life in the home and the strenuous fight of adult working years; in like measure the functions of the school medical officer lie midway between the personal attentions of the family doctor and the more general and impersonal activities of the medical officer of health." This quotation well represents Dr. Cronk's level-headed views. The school medical officer is an important link in the chain of health which commences with the antenatal clinic and works up through the infant and child welfare centre to the school clinic. He is, moreover, dealing not with patients who are likely to be seriously ailing, but with presumably healthy children who may have minor defects which it is his duty to detect and remedy early. While diseases of children on the one hand and matters of school hygiene on the other are well treated in many text-books, there was still room for an account of the minor departures from health of children attending school, and Dr. Cronk has taken up this subject and dealt with it very effectively. He admits that his main business has been to assemble the material on this subject which is scattered for the most part through many text-books and journals. So the book contains no startling theories or long records of personal experience, but it effectively covers the ground indicated by its title in small space.

BACTERIOLOGY.

Bacteria in Relation to Man. By JEAN BROADHURST, Ph.D., Associate Professor of Biology, Teachers' College, Columbia University. London: J. B. Lippincott Company. 1925. With 146 figures. Pp. 306. 12*s.* 6*d.*

AN excellent, interesting, and cheap lecture outline and practical class-book on bacteriology taken in a broad way. It is intended to form the first part of a book of which the author's "How We Resist Disease," noticed in THE LANCET,[1] is the second volume. It is certainly very good, and teachers of bacteriology to medical students would do well to go through it and resurvey their own courses. Some of the vivid liveliness of the present, and more of the respect for the past history of the subject might be transplanted with advantage. For whom the book is intended in Columbia University is not very clear. It is one of a

[1] THE LANCET, 1923, ii., 20.

series of "Nursing Manuals," and that it is framed for those with a limited scientific training is suggested by finding such words as "cubic centimeter" defined in the glossary at the end. How a nursing course could properly include such a book is beyond understanding, and one suspects that it is one of many attempts to do what mankind has ever tried—find a royal road to learning. But for whoever it has been written, it will prove a very good book for those who have been adequately prepared to use it.

TEXT-BOOK FOR NURSES.

Anatomy, Physiology, Surgery, and Medicine. Third edition. By E. W. HEY GROVES, M.D., B.Sc., M.S., F.R.C.S.; and the late J. M. FORTESCUE-BRICKDALE, M.A., M.D. Oxf., M.R.C.P. Lond. The Medical Section revised by J. A. NIXON, C.M.G., M.D. Cantab., F.R.C.P. Lond. London: Humphrey Milford, Oxford University Press. 1925. Pp. 645. 20*s*.

SINCE its first appearance in 1912 "Groves and Brickdale" has been recognised as a valuable text-book for nurses. The third edition does not differ greatly from the original issue. The object of the authors has been to present the elements of anatomy, physiology, surgery, and medicine in a simple yet accurate manner, and in the preparation of this new edition the text shows signs of careful revision to secure this end. In the medical section some of the chapters have been rewritten and a new chapter on Hygiene has been added. This contains a short account of such subjects as water-supply, ventilation, refuse disposal, personal hygiene, disinfection, heating and lighting, all subjects with which the modern nurse must be to a certain extent familiar, for the modern patient has often more than a smattering of knowledge on these public health questions.

A close study of this book should enable any nurse to grapple successfully with the various theoretical examinations with which she is confronted.

JOURNALS.

JOURNAL OF INDUSTRIAL HYGIENE. March and April, 1925.— In the March issue Dr. H. W. Haggard discusses the toxicology of hydrogen sulphide, which he concludes may produce fatal poisoning with a concentration of 0·2 per cent. of the atmosphere. Below 0·1 per cent. respiration is little affected. The heart continues to beat after respiration has failed; therefore artificial respiration as a method of resuscitation is important. The gas is an irritant to the eyes as well as being toxic. When inhaled in small amounts, hydrogen sulphide is rapidly oxidised in the body, when its toxicity is neutralised.—Inhalation as a path by which industrial poisons enter the body is dealt with by Prof. L. Preti, who points out that the respiratory apparatus is a path of entry for most industrial poisons whether in the form of gas, fumes, vapours, or dust. Neither gases nor fumes produces pulmonary lesions different from those of ordinary inflammatory processes. Certain dusts lead to pneumonoconiosis; while toxic dusts, such as those of lead, cause their specific form of poisoning. The writer considers compulsory insurance against occupational diseases a valuable way of bringing about their prevention.——In the April issue the subject of punctate basophilia in lead workers receives attention from Dr. A. Sellers, who has conducted blood examinations of a number of men exposed to lead absorption. He considers that the presence of punctate basophilia is an extremely delicate method of detecting lead absorption, and that its degree affords indication of the amount of absorption taking place, even though it cannot distinguish between absorption and clinical symptoms of poisoning.—H. Green describes methods for photographing and measuring fine particles, such as are liable to be inhaled in industry. He points out the difficulties associated with the work. His paper is one which must be of value to photomicroscopists.—The third of a series of articles dealing with the laundry trade is contributed by Miss M. Smith, who discusses atmospheric conditions as found by her. She concludes that variations in output are not unconnected with the problem of ventilation, and points out that even where temperature cannot be reduced owing to machines, such as calenders being hot, still conditions can be mitigated by keeping the air moving. The evidence she quotes supports the need for keeping laundries cool by such things as lagging steam pipes and covering lids of presses with asbestos.—The last article, by Prof. E. L. Collis and Dr. H. M. Vernon, reports upon a comparison of old and new processes in the tinplate industry. A new labour-saving device, which combines several processes previously carried out by hand, is described. This machine exposes the workers to less radiant heat, to lower air temperature, to more rapid air current, and less fumes and dust. The men employed under these conditions were found to experience better health and to possess greater earning capacity.

THE price of Mr. H. W. S. Wright's "The Conquest of Cancer," reviewed last week, is 2*s*. 6*d*. and not as stated.

MINISTERIAL DECISIONS ON THE CONDUCT OF INSURANCE PRACTICE.

REPORTS OF SIX INQUIRY COMMITTEES.

WE print below summaries of the findings of six Inquiry Committees appointed by the Minister of Health during the past six months to investigate representations that the continuance on the panel of an insurance doctor would be prejudicial to the efficiency of the medical service of insured persons. Except where otherwise stated, the complainant was an Insurance Committee. Those facts only are summarised which the Inquiry Committee found to be proved by the evidence submitted to them. The decision given by the Minister after considering the Committee's report is appended to each case. It will be observed that in three cases the Minister, although deciding that the doctor's name should not be removed from the Medical List, imposed a pecuniary penalty. The justice of this policy, more especially in connexion with Cases 4 and 5, has been called into question by some representative members of the profession.

(1) *Failure to Keep Adequate Records, or to Supply R.M.O. or Insurance Committee with Information.*

In this case the Minister himself initiated the appointment of the Inquiry Committee.

(*a*) Dr. A. B. practised in an industrial area and had at the material time 317 insured persons on his list. On various dates he received from the R.M.O. 17 forms R.M.2[1] in respect of insured persons to whom he had issued certificates of incapacity, and subsequently R.M.O. sent him reminders. As the doctor failed to return the forms, the divisional medical officer wrote special letters in seven of the cases, calling the doctor's attention to his failure to carry out his obligations under his terms of service. Subsequently the divisional medical officer visited Dr. A. B., who then admitted receiving the forms and reminders and promised to comply with the regulations in future. None of the forms was in fact returned. A year later the R.M.O. visited the doctor and pressed for the return of two of the forms which were specially needed. The doctor promised to return them, but did not. Since the beginning of 1921 Dr. A. B. had returned to the R.M.O. only three out of 20 forms R.M.2 which had been sent to him. The Inquiry Committee were of opinion that Dr. A. B. had "persistently and without any justification"

[1] This is the form which a doctor is required to complete when the Approved Society of one of his insurance patients to whom he has issued a certificate of incapacity asks for a special examination of the patient by a medical officer of the Ministry of Health.

neglected to furnish information properly required by R.M.O.

(*b*) On March 4th, 1921, R.M.O. visited Dr. A. B. and found that the medical record cards were being "extremely badly" kept. On Feb. 20th, 1922, R.M.O. again visited the doctor and found the cards "much better kept," 50 per cent. showing medical entries. On April 24th, 1924, R.M.O. visited Dr. A. B. a third time and found that out of 100 cards picked at random only 18 contained any medical entries for the year 1923. The Inquiry Committee were satisfied that if the cards had been properly kept at least three times as many should have contained entries. Out of 389 record cards produced at the hearing, 234, or 60 per cent., showed no entries and only 49 contained medical entries for the period April, 1923, to September, 1924. The Inquiry Committee were of opinion that the figures should have been 90 per cent. and about 196 respectively. Further, no clinical notes whatever had been made on the record cards, even in cases where such notes were obviously desirable. The Inquiry Committee were of opinion that Dr. A. B. had "persistently neglected to make any entries even of his diagnosis in a large proportion of his cases of insured persons."

(*c*) In 46 cases application had been made to Dr. A. B. by the Insurance Committee for the return of medical cards: in 38 of these cases a second application had been made and in 16 a third application. None had been returned. The Inquiry Committee were of opinion that there was no reasonable excuse for this neglect.

(*d*) The following deductions had, prior to the date of the inquiry, been made from Dr. A. B.'s remuneration in respect of his failure to render forms R.M. 2 and to return record cards to the Insurance Committee: May 16th, 1922, £3; Nov. 7th, 1922, £10; April 23rd, 1923, £20; Oct. 8th, 1923, £20. In communicating the three later decisions to Dr. A. B. the Minister had warned the doctor that a continued persistent failure to comply with the terms of service would oblige the Minister to take a serious view of the matter and to consider whether steps should not be taken with a view to the removal of his name from the Medical List.

The Inquiry Committee, while not satisfied that any real animadversion on the manner in which Dr. A. B. had been keeping his medical records had been made by an officer of the Ministry since R.M.O.'s visit of March 4th, 1921, were of opinion that the previous history of the case displayed "a persistent disregard" of the obligations accepted by the doctor and that this was due to "gross negligence and slackness" on the doctor's part. The report concludes thus: "The Committee are regretfully of opinion that in view of Dr. A. B.'s past behaviour, it would appear hopeless to expect him to perform properly in the future the duties imposed on him by his terms of service of keeping and sending in medical record cards and supplying the Regional Medical Officer with information."

Decision of the Minister.

The Minister decided that Dr. A. B.'s name should be removed from the Medical List.

(2) *Failure to Visit; Absence from Surgery.*

Dr. C. D. had 700 insured persons on his list; his surgery hours, as notified to the Insurance Committee, were 9–11 A.M. and 6–8.30 P.M. on week-days except Fridays, and 9.30–10 A.M. on Sundays and public holidays.

(*a*) E. F., a married woman on Dr. C. D.'s list of insured persons, was taken ill, inter alia with spitting of blood, in the early morning of March 11th, 1924. Although messages were left at the doctor's surgery at 9 A.M., midday, and 6.30 P.M. by E. F.'s mother and husband, the respondent did not call. On the following morning the patient's mother again called at the surgery, but the doctor did not visit and the mother thereupon called in another doctor who found E. F. to be suffering from broncho-pneumonia. The Inquiry Committee were satisfied that some if not all of the messages were brought to Dr. C. D.'s notice.

(*b*) G. H., an insured person on Dr. C. D.'s list, had been treated by the doctor during Easter, 1924, for appendicitis. On the morning of June 16th, 1924, G. H. was taken ill with severe pains and, returning from work, called at the doctor's surgery at 10 A.M. The doctor was not at the surgery, and G. H. left a message with the maid and returned home. As the doctor did not call, the insured person's father left a further message at 6 P.M. Dr. C. D. called at 7 P.M., diagnosed and certified appendicitis, and promised to call on the 18th. On the 17th, as G. H. was considerably worse, his father called at the surgery and, having ascertained that the doctor was away until the next day, he left an urgent request for an early visit. By the 20th the doctor had not called, although a letter requesting him to do so had been delivered at the surgery on the 18th. On the 20th another doctor was called in and recommended an operation, which was performed in hospital on July 14th.

(*c*) On July 5th, 1924, the clerk to the Insurance Committee called at the surgery at about 10 A.M.; neither Dr. C. D. nor any other doctor was in attendance and no notice was exhibited to explain his absence. The clerk called again at about 6.30 P.M. and found 24 patients waiting; the doctor did not arrive until 6.30, when he went out to an urgent case and returned in about a quarter of an hour; he then dismissed all but the urgent cases. On July 8th, the clerk called at the surgery at 11 A.M. and at 11.45 A.M., and on the 30th at 10.45 A.M.; Dr. C. D. was not in attendance on any of these occasions and no deputy had been appointed.

(*d*) Prior to the date of the inquiry the Insurance Committee had made complaints against Dr. C. D. with regard to certain irregularities connected with records and prescriptions. The Inquiry Committee, however, rejected evidence of these complaints "subject to the fact that all these matters will be brought to the notice of the Minister."

The Inquiry Committee were of opinion that the Insurance Committee were justified in making their representation, and they recommended that Dr. C. D. be ordered to pay the costs of the inquiry with the exception of the cost incurred by the Insurance Committee adducing evidence under (*d*) above.

Minister's Decision.

The Minister decided that Dr. C. D.'s name should be removed from the Medical List, and an order as to costs was made in accordance with the Inquiry Committee's recommendation.

Note.—In this case the doctor did not attend and was not represented at the hearing, neither did he submit a formal answer to the Insurance Committee's representation.

(3) *Fraudulent Entries in Day-Book under Attendance System of Payment.*

The representation in this case was made by the Local Medical and Panel Committee in an area which had adopted the attendance system for the payment of insurance practitioners. Under this system the remuneration paid to the doctor is calculated on the services actually rendered to insurance patients, as evidenced by entries in the doctors' day-books.

(*a*) Dr. I. J.'s day-book for the quarter ended March 31st, 1924, showed an entry of attendance on March 6th against the name of K. L., a male insured person, with a diagnosis of bronchial catarrh. On March 6th, at the request of the wife of K. L., Dr. I. J. had called to see her young son, at a time when K. L. was not at home. Upon being offered a fee by the wife, Dr. I. J. refused to accept it but asked the wife to call at his surgery with her husband's medical card; when she did so the doctor's assistant, who was present in the surgery with Dr. I. J. and was apparently acting under his principal's instructions, entered Dr. I. J.'s name on the medical card and entered K. L.'s name and address in the day-book. Dr. I. J. then prepared and signed himself a prescription for cod-liver oil and malt on the official form in the husband's name. The doctor again visited the boy on March 9th, but made no entry in the day-book. On March 10th and March 19th Dr. I. J.'s assistant gave the wife a prescription on the official form in her husband's name, but the Inquiry Committee were not satisfied that this was done on the instructions of Dr. I. J. The Inquiry Committee were satisfied that Dr. I. J. had at no time attended K. L., neither had K. L. applied to him for treatment, nor taken any medicine prescribed by him.

(*b*) For the same quarter Dr. I. J.'s day-book contained entries for an attendance and visit to M. N. on Jan. 7th, and for visits on Jan. 14th, 15th, and 21st with a diagnosis of dyspepsia; entries for visits to M. N.'s wife, also an insured person, appeared in the day-book for Jan. 7th, 8th, 12th, and 15th, and for three visits in March. The facts proved before the Inquiry Committee showed that on March 7th, in response to a request from M. N., Dr. I. J. called and examined M. N.'s wife; he did not, however, examine M. N. (who was not at the time suffering from any complaint), and M. N. had neither consulted the doctor nor received a visit from him nor attended at his surgery.

The Inquiry Committee found that as regards both cases Dr. I. J. had "deliberately and fraudulently caused false entries to be made on the day-book sheet." As regards Case (*a*) the Committee stated that apparently the doctor's object was to save the insured person's pocket at the expense of the Insurance Committee, but that they did not regard this as being any justification whatever for the doctor's conduct.

The Insurance Committee found that two further charges were not proved except as to the issue of one prescription without an examination of the patient. They recommended that Dr. I. J. be ordered to pay the costs of the Local Medical and Panel Committee.

Minister's Decision.

The Minister decided that Dr. I. J.'s name should be removed from the Medical List, and that the costs of the Local Medical and Panel Committee, taxed as between party and party, should be paid by Dr. I. J.

Note.—In this case the doctor had sought to retire from the panel on the day preceding the inquiry, and had sold his practice.

(4) *Alleged Negligence in Diagnosis.*

On the evening of June 28th, 1924, O. P., an insured person on the list of Dr. Q. R., called at the doctor's surgery and complained of abdominal pain of some 24 hours' duration and of having twice vomited in the morning of that day. His temperature was 98·6° and his pulse 84. Dr. Q. R. made "a most careful and complete examination" in view of the possibility of appendicitis, and in the absence of tenderness or rigidity came to the conclusion that the patient was suffering from intestinal colic. He prescribed castor oil and a rhubarb and chloroform mixture, ordered the patient to bed, and gave a first certificate of incapacity in accordance with his diagnosis. He made a full note of his observations on the patient's record card. The doctor did not call to see the patient on the 29th. On the 30th, as the pain continued and the patient again vomited, his wife called at the surgery in the evening, when the respondent was not there. She called again later. There was considerable conflict of evidence at the inquiry as regards what took place at this interview between the patient's wife and the doctor. The Inquiry Committee thus summarised their impression of what had occurred: The patient's wife "made known to the respondent that the deceased was still in pain and not better; she made inquiries as to diet and requested the respondent to call and see her husband. The respondent did not offer to call and did not, in fact, call on that evening, but recommended the external application of hot flannel and turpentine." On July 1st the patient's wife left a message at the surgery asking the doctor to call because her husband was worse; the doctor called at about 12.30 P.M. (the second call on his round), and upon examination came to the definite conclusion that the patient was suffering from appendicitis and so certified him. The patient was removed to the infirmary at 2.45 P.M. Some six hours afterwards an operation was performed and the patient died on July 4th from peritonitis and toxæmia. The operation disclosed a swollen and œdematous cæcum, the appendix, which was gangrenous and perforated, lying in a retrocæcal position and tightly bound down.

The Inquiry Committee expressed the opinion that (*a*) in view of the condition disclosed at the operation an early diagnosis would have been difficult and that the risk involved in an operation on such an appendix is greater than in a normal case; (*b*) that there could be no suggestion of negligence or want of care in relation to what happened on June 28th and 29th; (*c*) that as regards June 30th, having knowledge that a person suffering from intestinal colic had not recovered in 48 hours and was still suffering pain, it was the doctor's duty from a professional point of view to take control of the situation and to insist on paying a visit on the evening of that day. On this point the Inquiry Committee were not satisfied that Dr. Q. R. was justified in relying on his own impression of the information furnished by the deceased's wife without assuring himself whether or not some other cause had supervened to explain the continuance of the illness. The report adds: "At the same time we doubt whether the word negligence is apt as a description of the criticism set out in the preceding sub-paragraph. Certainly gross negligence as alleged in the representation cannot be imputed to the respondent. We would rather describe our criticism as connecting an error of judgment as to the urgency of the case having regard to the information possessed by the respondent on the evening of June 30th and the morning of July 1st."

The Inquiry Committee considered that it was quite impossible to attribute the death of the deceased to anything done or left undone by the doctor. While feeling obliged to reject evidence as to the doctor's care and skill in his insurance practice, the Committee "hardly doubt that the Minister would always be ready to receive reports of such good conduct although not based upon sworn evidence." The Committee finally expressed the opinion that the charge of gross negligence put forward in the representation had failed; they added: "We cannot, however, hold that the complainants were not justified in all the circumstances in presenting their representations, and we think that the justice of the case will be met by our recommending that each party should bear their own costs of the inquiry."

Minister's Decision.

The Minister decided that Dr. Q. R.'s name should not be removed from the Medical List and that no order should be made as to costs. In the covering letter communicating this decision the Minister stated that the inferences of fact referred to in (*c*) above indicated "a failure to provide a proper standard of medical treatment" and he accordingly decided to withhold £10 from the doctor's remuneration.

(5) *Alleged Negligence in Diagnosis and Treatment.*

S. T., aged 18, a male insured person on the list of Dr. U. V., had on more than one occasion previously been treated by this doctor for septic sore-throat. On the evening of April 5th, 1924, the patient attended at the doctor's surgery for treatment of a sore-throat. The patient was then suffering from acute follicular tonsillitis but without any marked fever, and the doctor prescribed suitable medicine and treatment, and issued certificates on April 5th, 12th, 19th, and 26th. The doctor visited the patient at his home on April 6th, 7th, 9th, 11th, 13th, 15th, 16th, 17th, 19th, 20th, and 22nd, and during this period continued to treat the patient for tonsillitis. On April 9th the patient showed signs of a broken quinsy. On April 14th he had one single attack of nasal hæmorrhage, and on the night of that day and on two subsequent days suffered from regurgitation in an attempt to take liquid food; the doctor was informed of these symptoms. From about April 15th the patient's speech was affected and on or about April 21st the patient suffered from pains in his chest. On April 26th—the patient then having no temperature—the doctor recommended a change of air, and permitted the patient to be out of bed on the three succeeding days. The patient was worse during the days April 26th to 29th, and was seriously ill when he visited the respondent in the surgery on April 30th. On that day the doctor diagnosed the case as being probably one of diphtheria, mainly owing to a test of the soft palate which showed signs of paralysis. In the opinion of the Inquiry Committee the patient was, in fact, attacked by diphtheria on April 12th or a few days thereafter. Following upon his diagnosis of diphtheria the doctor gave the necessary certificate enabling the patient to be removed to hospital. The patient died from the effects of diphtheria and Vincent's angina. The doctor did not throughout the period of treatment take a swab of the throat.

The Inquiry Committee formed the opinion that the doctor did not suspect diphtheria until April 30th. They considered it impossible to state with certainty that a swab taken at the appropriate time would have given a sure indication of the presence of the disease, but they regarded as unfortunate the fact that the doctor, in his persistent diagnosis of tonsillitis, did not adopt this further test for the purpose of checking his opinion. Apart from any question as to the degree of skill possessed by the doctor, the Inquiry Committee were of opinion that no possible suggestion could be made against him of any neglect in treatment. They thus expressed themselves: "When a charge of gross negligence is made against a doctor it seems just to avoid an attitude of mind which—to use a colloquial phrase—savours of being wise after the event and not to attach undue weight to the death of the patient with the obvious exception of cases in which the death can be proved to be attributable to such negligence. . . . In our opinion the charge of gross negligence wholly fails; we think that the complainants were not justified in making their representation and thus putting in motion the machinery which involved the inquiry heard by us. In pursuance of this view we recommend that the complainants be ordered to pay to Dr. U. V. his taxed costs of the inquiry." The Inquiry Committee drew attention to the marked fairness and impartiality displayed by the Insurance Committee's representative in conducting the case.

Minister's Decision.

The Minister decided that Dr. U. V.'s name should not be removed from the Medical List and that the costs, taxed as between party and party, should be paid by the Insurance Committee. In the letter communicating this decision the Minister stated that he was advised "that some of the symptoms from which, according to the report of the Inquiry Committee, this patient suffered were such as should have suggested the presence of diphtheria to any practitioner exercising a reasonable degree of care and skill in his attendance on the patient with sufficient force to make t incumbent upon him to take such steps as were

reasonably open to him to ascertain whether he was justified in his view that the case was not one of diphtheria. The Minister is therefore of the opinion that Dr. U. V., in omitting to take such steps, failed to take precautions which any reasonably prudent medical practitioner would have taken. The Minister is therefore in agreement with the original recommendation of the Medical Service Subcommittee that a substantial deduction should be made from the practitioner's remuneration." A sum of £20 was accordingly ordered to be deducted.

(6) *Miscellaneous Failures to Comply with Terms of Service.*

Dr. W. X. had 2000 insured persons on his list. His surgery was from half to three-quarters of a mile from his house; his surgery hours as notified to the Insurance Committee were: 9 to 10 A.M. on each week-day except Thursday, at his surgery; 4.30 to 5 P.M. at his residence, and 5 to 6 P.M. at the surgery. The doctor had suffered for some years from a dilated heart and angina pectoris; in March, 1924, his condition became worse and he was unable to carry on his professional work for three months.

Various charges were made against the doctor of absence during the prescribed surgery hours on dates in December, 1923, and February, 1924. Several cases were proved where patients had waited at the surgery from 9 A.M. until 10 and 10.30 A.M. before the doctor's chauffeur came to inform them that the doctor would not attend at the surgery on that morning. On one occasion when the doctor failed to attend between 15 and 20 persons waited at the surgery to see the doctor and were not invited to go to the doctor's house. While the Inquiry Committee accepted the doctor's evidence that he was not in a fit condition to take the morning surgery on some of the material dates, they were satisfied that on three dates no message notifying the doctor's inability to attend was sent to the surgery until 10 o'clock or after and that none of the patients was invited to go to his house. They considered that a message should have been sent to the surgery much more promptly, and that, having regard to his condition, the doctor should have made advance arrangements to ensure that his patients were properly attended if he were prevented by sudden ill-health from taking his morning surgery.

On a further charge the Inquiry Committee found that on one occasion when the doctor was unwell he was informed of a patient's illness and was requested to call; he failed to call or to send any other doctor in his place. The Inquiry Committee attributed this neglect to forgetfulness due to ill-health rather than to wilfulness. The Inquiry Committee also found as proved two cases of ante-dating of certificates, six cases where the doctor had failed to supply the Insurance Committee with any record of the treatment of temporary residents, and three instances in which the doctor, without any valid excuse, neglected to furnish the prescribed reports to the tuberculosis officer and R.M.O. The Inquiry Committee were also satisfied that the doctor had neglected to return to the Insurance Committee medical records within a reasonable time after being requested to do so, but they were of opinion that there had been a distinct improvement in this respect since June, 1924. Finally the Committee endorsed a charge that since July 1st, 1924, the doctor had sent to the Insurance Committee 70 medical cards (acceptances) on which the doctor's name had been signed by a lay secretarial assistant.

The Inquiry Committee, in summarising the case, stated: "There is no doubt that Dr. W. X. has been persistently and seriously slack in the observance of the obligations imposed on him by his terms of service and has made a practice of disregarding official communications addressed to him in connexion with his duties. In the view of the Inquiry Committee, the plea of ill-health can only be accepted as a palliation of the doctor's defaults to a very small extent, and the root of the trouble is an ingrained habit of slackness and procrastination."

Minister's Decision.

The Minister decided that the doctor's name should not be removed from the Medical List, but that he should pay the costs of the inquiry and that, having regard to the findings of the Inquiry Committee as to the irregular attendances at the surgery and his other failures to comply with the terms of service, £100 should be deducted from his remuneration. The Minister added that if any further representations were made and established as to the doctor's failure to comply with his obligations as an insurance practitioner, the Minister would have no option but to remove his name from the Medical List.

Reports and Analytical Records.

DE-NICOTINISED TOBACCOS.

(CESTRADA CIGAR AND CIGARETTE CO., 23, PALL MALL, S.W. 1.)

To many smokers, more particularly those who unfortunately suffer from cardiac affections and throat irritation, the suggestion of being able to obtain tobacco from which a portion of the nicotine has been removed is attractive. The Cestrada Company supply such tobacco, and the following are the results of our examination of some of the products sold by that firm:—

Tobacco.	Nicotine, per cent.		Moisture, per cent.	Mineral matter, per cent.	Reduction of nicotine, per cent.	
	On sample.	In moisture-free tobacco.			On sample.	In moisture-free tobacco.
Turkish	1·35	1·57	14·1	17·4	—	—
Ditto, partially de-nicotinised	1·24	1·45	14·7	16·6	8·1	7·7
Virginian	2·41	2·77	12·7	10·3	—	—
Ditto, partially de-nicotinised	2·02	2·39	15·6	9·2	16·0	13·7
Blended "Dormy" mixture	1·86	2·20	15·4	14·2	—	—
Ditto, partially de-nicotinised	1·48	1·74	14·7	13·9	20·4	21·0

These results show an appreciable reduction in the nicotine content of the tobaccos which have been subjected to treatment. We have submitted the samples to smoking trials and fail to detect any appreciable difference in flavour and smoking qualities between the treated and untreated tobaccos. It is possible that an even greater reduction in the nicotine content could be effected without impairing the quality, and many smokers may find with the use of these tobaccos that they have been undergoing an unnecessary amount of deprivation.

SALODINE.

(THE SALT UNION, LIMITED, COLONIAL HOUSE, LIVERPOOL.)

This is a prepared table-salt over the manufacture of which unusual pains appear to have been exercised. The salt is sold to the public at the same price as ordinary table-salt, and owing to its iodine content is recommended to medical men as specially suitable for goitrous subjects.

ROEBARYT.

(SACCHARIN-FABRIK, RONSHEIM AND MOORE, 11A, WORMWOOD-STREET, E.C. 2.)

This is a new preparation to be used as a meal in X ray diagnosis of the alimentary tract, stomach, and bowel. The difficulties sometimes attended with the use of barium sulphate are well known, and various attempts have been made to overcome them, which have not always proved satisfactory. The production of Roebaryt is a design to manufacture a preparation of barium sulphate which, by mixing with water, will form a stable suspension. A vegetable mucoid material is employed which has the property of producing a viscous mixture which resists breaking up for a prolonged time, thus avoiding the necessity of taking X ray photographs during the actual consumption of the meal. According to the directions, Roebaryt is easily prepared, 150 g. being stirred with about 100 c.cm. of water at any desired temperature, more water being added until the mixture attains the required consistency. The preparation is supplied in cartons for both oral and rectal employment.

THE LANCET.

LONDON: SATURDAY, JUNE 20, 1925.

CHANGING TYPES OF DISEASE.

IN their recent addresses to the members of the Inter-State Post-Graduate Assembly of America, both Lord DAWSON and Sir THOMAS HORDER laid special stress upon the opinion, which has been slowly growing up in the many branches of the profession, that a large proportion of our present-day maladies are the product of the rush and jostle of modern life. This conception Sir THOMAS HORDER closely allies to a further one, and makes some suggestions as to their interdependence. He believes that at the present day we are beset to an increasing extent by infections for which the less pathogenic types of micro-organisms are responsible, and, in fact, that we are becoming "more and more the prey to our saprophytes." This, he further suggests, is a direct outcome of nervous strain. The thesis is an unattractive if stimulating one, but one which, for these very reasons, demands the most careful and staid examination before it can be accepted. That there is an ebb and flow in the severity of certain diseases there is no room for doubting, as a comparison of scarlatina in the time of SYDENHAM, in the eighteenth century, and at the present day will amply show. What determines these fluctuations we do not know, and a question as to the reason for the decline in incidence of other infections does not find us much better enlightened. Whilst a fuller knowledge of the causation and pathogenesis of typhoid, tuberculosis, and typhus, to name only three of the acute infections, might be expected to contribute mainly to their gradually diminishing incidence, it seems undoubtedly the case that in many such conditions this decrease cannot be truly claimed as a triumph for bacteriology, but that "common-sense" and the ordinary hygienic measures indispensable to the comfort of crowded modern life have initiated this decline, which, in the case of any communicable disease, will tend to go on simply from a reduction of the number of carriers in existence. In such cases knowledge has often advanced *pari passu* with the decline of the disease and has not been, strictly speaking, responsible for it, although no doubt contributing. There is a possibility that in accepting and congratulating ourselves upon the reduction in incidence of such diseases we may tacitly assume a reduction in their severity, simply from the knowledge of a reduced total mortality. In many cases this is definitely not so, and there is no reason to believe that either tubercle or typhoid are any less virulent now than at any time in the period with which we are especially concerned. Granted, then, that certain diseases are declining in incidence, if not in virulence, this is to some extent offset by an increase in other directions. There are, on the one hand, the epidemic maladies, such as influenza, which in recent years has been so severe a scourge, and the less well understood condition of encephalitis whose pathogenesis and transmission are yet unknown; whilst of the more chronic conditions arterial disease and cardiovascular degeneration would appear to be increasingly prevalent.

If we accept, as we are bound to do, the decline of many of the infections and make due allowance for the improved hygiene and régime of modern life—which must be held of paramount importance in this direction—we have yet to ask if this satisfactory state of affairs can be entirely explained on such lines, or does bacteriology offer any further explanation? The ability to answer the question exactly involves a knowledge of one of the most obscure fields in this branch of medicine, and at the present no complete answer can be given. It is possible that in the passage of time bacteria may slowly change their mode of life and tend to move from a position of pure parasitism towards one of symbiosis and ultimately of saprophytism. It has been pointed out repeatedly that the state of ultra-parasitism is not a desirable one from the point of view of the organism's survival, since death of the host will bring in its train death of the parasite and ultimately the extinction of the latter. Thus the hypothesis that certain bacteria may, in the course of their evolution, become modified in virulence, so as better to accommodate themselves to a long life in the tissues of the invaded person, is a not unreasonable one and would connote a change in type and a lessened severity in the disease which such an organism caused. On the other hand, it appears certain that the pathogenic organisms have been originally derived from saprophytes of the same type and that, for example, the typhoid bacillus is a member of the large group of intestinal coliform organisms which has specially developed the parasitic habits and with this its distinctive characters; and, in like manner, the spirochæte of syphilis is probably derived from the saprophytic spirochætes common upon the genital organs. In such ways alterations in the severity of a recognised disease may be correlated with slow changes in the degree of parasitism possessed by its causal organism. Sir THOMAS HORDER has singled out the condition of ulcerative endocarditis. No doubt the impression gained by clinical and post-mortem experience over a number of years is that the more acute, "malignant," types of the disease are becoming fewer and that the more chronic, or subacute, type, with less clamant symptoms and the occurrence of large non-suppurating infarcts, is on the increase. Although conclusions based upon impressions are notoriously uncertain, in the absence of any available statistical information upon the subject we may, for the moment, accept this. The condition is most commonly a streptococcal infection, and it is significant that of all the organisms studied by medical bacteriologists, the streptococcus group seems the least well defined, the most ubiquitous, and the most mutable. F. W. ANDREWES long ago suggested that this group was in an actively evolving condition and pointed to the main types which, according to his classification, seemed to be emerging. Further knowledge supports this view, and because of the uncrystallised condition of the whole group it remains the despair of the systematist. The present period of medicine may well be the period of streptococcal infections, and from erysipelas, puerperal fever, broncho-pneumonia, and scarlatina (for the last of which the evidence in favour of a streptococcal causation is weighty), through such more chronic conditions as endocarditis, and possibly, rheumatism, to the minor infections of teeth and tonsils, we are constantly meeting with the streptococcus in its different grades of activity. The factors controlling its varied degrees of virulence are not understood. Virulence, at the best, is a difficult matter to assay, and the search has been directed more towards the

finding of other characters which would indicate this than towards its exact estimation. By various tests the organisms in this great heterogeneous group are being split up into divisions, often ill-defined and with uncertain boundaries, but though progress may be slow a better comprehension of the types of streptococci and their association with types of disease is being steadily worked out.

The further question upon which Lord DAWSON and Sir THOMAS HORDER laid stress is the influence of modern life upon the incidence of the more chronic infections. Here we are upon even less certain ground. All that can be truly said is that there is an association, evident to every mind, between the two, but whether this is a chance association or whether it is a causal one has yet to be definitely discovered. It must also be borne in mind that in connexion with any increase in endocarditis in the war and immediately post-war periods, this upheaval imposed an immense physical, as well as a nervous, strain upon a populace a considerable proportion of which normally followed purely sedentary occupations. The sharp check in the slowly declining death-rate from pulmonary phthisis, which occurred during the war period, may be most reasonably attributed to this physical strain lighting up dormant lesions and accelerating the course of slowly progressive ones. Knowledge of the influence of the nervous system, and in particular of its higher parts, upon bodily resistance and immunity to infections is scanty, and the field for inquiry very large. The way has been pointed and the future will supply the answer to many questions which at present are open.

A NEW ZEALAND EUGENIC INQUIRY.

THE New Zealand Ministry of Health has just published the report of a Committee of Inquiry appointed to examine the question of the treatment of mental defectives and sexual offenders in the Dominion. There evidently exists in that country, so justly proud of the virility of its people, a keen consciousness of the number of its mental defectives, their expense to the State, and their prospective increase through uncontrolled fecundity. Latterly, we understand, the accident of a series of sexual crimes of a revolting character has attracted popular attention to the possible connexion between sexual offences and the treatment of mental deficiency. As the Committee's report recognises, these two matters are separate. Some mental defectives show lack of control in sex instincts and functions as in other respects, but not all feeble-minded persons are sexual offenders, nor are all sexual offenders mentally deficient; on the contrary, it is notorious that some offenders of the worst type are often found to be intellectually above the average. The two questions being distinct, the recommendations made by the Committee in respect of each can be summarised separately. Briefly, it is proposed that the criminal law be altered to permit the passing of an indeterminate sentence upon the sexual offender. The court should have full discretion to say whether sentences should be definite or indeterminate; the Prisons Board would have power to recommend release on probation or final discharge in the case of prisoners undergoing an indeterminate sentence. A psychiatrist should be appointed to advise the Prisons Department (and possibly the courts) on the classification and treatment of sexual offenders. The Prisons Board should also be advised in these matters by a new Eugenic Board, which should include a skilled psychiatrist and a member of the medical profession, and be presided over by a magistrate as chairman. Such are the recommendations in respect of sexual offenders.

On the other question—the treatment of mental defectives—the findings and recommendations are more elaborate. The Committee expresses the general view that the unchecked multiplication of the feeble-minded and epileptic continually swells the sum of human misery and the financial burdens of the State, and leads to the serious deterioration of the race. They recommend adding to the New Zealand Mental Defectives Act the definition of "moral imbeciles" contained in the English Act of 1913. Here we hope it will be borne in mind that the medical officers of English prisons find that definition unsatisfactory, since the words "from an early age" involve difficulties of proving the patient's early history, which often result in excluding the application of the definition from cases to which it should apply. The Committee advises the creation of a special branch of the Mental Hospitals Department to deal with all classes of mental defectives who are not inmates of mental hospitals, to develop after-care work, and to keep a complete register of mental defectives, epileptics with dangerous, immoral, or other anti-social tendencies, moral imbeciles, and persons discharged from mental hospitals. The plan of this register—which owes much, we believe, to the suggestions of Dr. THEODORE GRANT GRAY, the medical superintendent of the Nelson Medical Hospital—is that all school medical officers should have a statutory duty to report the names of feeble-minded or epileptic children in their districts; local education authorities would report the names of all children not attending school on account of these defects; hospitals, mental institutions, industrial schools, and reformatories would make similar reports; and finally, every judge or magistrate on convicting persons tainted with mental deficiency or epilepsy would be empowered, subject to confirmation by an alienist, to order the name of the accused to the placed upon the register. The placing of a person's name upon the register would be safeguarded by a right of appeal to the High Court on the part of the person concerned or his or her parents or guardians. Marriage with a registered person should be made illegal, and carnal knowledge of such a person should be an indictable offence. Other recommendations advocate the better use of special classes in schools, residential special schools for children who may benefit by manual training, the registration of inmates of special schools who are found incapable of benefit from further residence therein, and a power for the Eugenic Board to order the removal of feeble-minded persons or epileptics to special farm or industrial colonies. Not the least important recommendation is a more stringent system of investigating the family history of assisted immigrants and a closer supervision of those who enter the Dominion as ordinary passengers. New Zealand does not forget that part of her trouble is due to the careless admission of a low type of immigrant under the expansive arrangements of 50 years ago.

The Committee has a good deal to say on the much debated topic of sterilisation of the criminal and feeble-minded. They quote the cautious views of the Central Association for Mental Welfare of Great Britain that procreation by defectives is by no means the only menace attaching to their presence in the community, that, inasmuch as a sterilised female defective by a life of promiscuity or prostitution may become a virulent source of venereal infection, sterilisation is dangerous without segregation, a

dubious advantage if it encourages non-segregation, and unnecessary if segregation is imposed. But the New Zealand Committee does not agree that sterilisation is as yet impracticable. Though in relation to sexual offenders the report confesses that the available information is inadequate for final judgment, in relation to mental defectives it definitely advocates that the Eugenic Board be given power in suitable cases to make sterilisation a condition of release from mental institutions or of removal of name from the register. Persons thus operated upon and liberated should be released on probation with power to reincarcerate them in institutions if they are found to be leading an immoral life or for other sufficient reason. If the Dominion embarks upon this experiment, we shall watch its progress with interest. Our present information, derived from some of the United States of America, is uncertain and incomplete. Some of the States—Indiana for example—passed sterilisation statutes as long ago as 1907. But under the workings of the American constitution (which are hard of comprehension by outsiders) some of these statutes have been declared void, whether as contravening articles of the State's constitution which guarantee to the people "life, liberty, and the pursuit of happiness," or as infringing the constitutional objection to "unreasonable classification," since persons confined in State institutions are less apt to have children than the greater number of persons no more fit who, because of the prosperity of their parents, can be at liberty. In many case the statutes have remained a dead letter. Recent statistics are not available, but it is stated that four years ago there were 120 State institutions legally authorised to perform the operation of sterilisation, and that only 31 of these had made use of that authority. In the absence of definite experience New Zealand does well to move without precipitancy. We note that the Committee proposes no such operation be performed without the consent of the parents or guardians of the patient. The proposals will, of course, require an Act of Parliament, and the main difficulty of administering the Act will be the fixing of an exact standard of mental deficiency.

A MEDICO-LEGAL INSTITUTE.

THE annual general meeting of the Medico-Legal Society will be held on Tuesday, June 23rd, at 8.30 P.M., at the Royal Society of Medicine, 1, Wimpole-street, W., when advantage will be taken of the occasion to consider the suggestions of a Committee appointed by the Council of the Society upon the foundation of a Medico-Legal Institute in London. A summary of the suggestions of this Committee runs as follows:—

1. That it is desirable to have a Medico-Legal Institute in London for the investigation of medico-legal cases, and for the control of the teaching of Medical Jurisprudence.
2. That such an Institute would be available for the carrying out of medico-legal investigations for the whole of England and Wales if required, until similar institutes were established outside London in University centres in England and Wales.
3. That for the purposes of Medico-Legal investigation and research the Institute should be under the control of the Home Office, and that for the purposes of teaching, the Board of Education, the University of London, and the Royal Colleges of Physicians and Surgeons should exercise control.
4. That a Medico-Legal Museum should be formed in the Institute.
5. That the Medico-Legal Institute should provide facilities for the post-mortem examination of bodies sent to the Institute by coroners (these cases being used for teaching purposes). The Institute should provide specially trained experts from its staff, who, at the request of a coroner, would be available for making post-mortem examinations in any district.
6. That the medical staff of the Institute should be composed of a certain number of full-time experts—e.g., a director of the investigations, the holder of the Chair of Medical Jurisprudence, a toxicologist and a bacteriologist, and of a certain number of part-time experts, preferably those engaged in pathological work.
7. That the association of the Institute with the University of London would afford facilities for consultation with the professors of the different branches of Science and Medicine in the University.
8. That the Institute having a full-time staff, and possessing valuable medico-legal specimens, would afford special facilities for research.
9. That the Institute would be in the best position to provide adequate instruction for medical students in London, and would be a valuable centre for post-graduate teaching and for the training of medical men for posts such as that of police surgeon.

The proposals thus formulated open up for discussion a subject of considerable importance. The cases which in courts of law bring medical practitioners into contact, and sometimes into conflict, with members of the legal profession, are such that in the public interest they should secure full consideration in all their aspects. Those most directly concerned as parties vary from accused persons whose lives are in jeopardy, to others whose interest it is to secure personal damages in respect of physical disability, and the aim sought is ever the same, that justice should be done. It may safely be said that this can only be achieved through medical men, usually present as witnesses, and lawyers engaged as advocates, having the best possible training available for the parts that they have to play and appreciative knowledge of the issues involved. On ordinary occasions it has frequently appeared to us that the medical man has grasped the legal aspects and issues that have to be considered more fully and with a better sense of their import than the barrister or solicitor or possibly the judge, is able to do with regard to the medical points raised. No doubt in this the doctor has the simpler task of the two, and presumably the scheme of the Medico-Legal Society's Committee is prompted by a desire to provide education in medical jurisprudence for the benefit of solicitors and barristers, as well as of doctors. If this is so, the Council of Legal Education might be included among the controlling educational bodies.

In its general aspects the scheme should prove attractive to medical men and students, who will see in it a promise of post-graduate instruction and efficient training and of the provision of scientifically compiled records, illustrated by examples, of phenomena outside their normal experience. The supply of experts authenticated as such by a central body carrying official weight, may be found of considerable value by others, besides coroners, seeking expert advice and assistance. The problem of financing such an Institute has apparently not yet been tackled. This may not prove a serious one, since the public already is interested. The general attention aroused by some recent murder trials, the Harnett case, and the Bateman appeal, has not been evoked only by a morbid desire to be thrilled by details of "human interest." The public has seen that in questions of medical opinion the law and medicine are not always in accord, and their practitioners not always in sympathy. The founding of a Medico-Legal Institute should therefore meet with a substantial measure of general approval, if it is realised that the ultimate object of medical jurisprudence as a study is that justice should be done with the utmost possible certainty and efficiency in the many difficult and doubtful cases in which medical evidence is a determining factor.

Annotations.

"Ne quid nimis."

OUR DEFENCE AGAINST SMALL-POX.

IT seems superfluous to rehearse once again to our readers the arguments in favour of vaccination, when medical men as a body are fully aware of its value and vital importance. The existence of a small number whose conviction is lukewarm may be ascribed very largely to the effects of vaccination itself. So successfully has Jenner's discovery been applied that most of the present generation—doctors and laymen alike—have no conception of the horror of small-pox when it ravages unchecked. Race memory is short, and already the majority of laymen have forgotten why it was that their forefathers, a few generations back, willingly faced the risks of inoculation with the virus in order that they might live the rest of their lives free from the menace of the contagion. It is well to be reminded of these things, as the officials of the Research Defence Society realised when asking Dr. R. A. Lyster, medical officer of health for Hampshire, to speak on this subject at their annual meeting. Dr. Lyster illustrated the high incidence of small-pox by certain local records that have survived from pre-vaccination days. Kilmarnock from 1728 to 1764 had an average population of 4000, and 16 per cent. of all deaths were due to this disease. The mortality was mainly among young children, only three deaths occurring in persons over 20. A census taken at Chester in 1775 showed that only 1060 out of 15,000 persons had escaped small-pox. In Ware, in 1772, 2213 out of 2515 people had had the infection. As everyone who has investigated the subject knows, the statistical evidence in favour of vaccination is overwhelming. Dr. Lyster quoted a number of typical figures, such as those of the recent Toronto epidemic, where 71 per cent. of the unvaccinated victims died, while no person vaccinated within 12 years took the disease at all. Certain antivaccinators have ascribed the decrease in small-pox to the improvements of modern sanitation. Yet the medical officer of health for Gloucester at the time of the 1895 epidemic specifically noted that the area most seriously affected was newly built and but sparsely populated. In Dr. Lyster's opinion, the struggle against disease has been constantly hindered by the acclamation of universal panaceas, sanitation being an instance, but the universal panacea will never be discovered, because each disease has its own particular secret. Science has revealed this secret in certain cases, of which small-pox is one, and there can be no excuse for allowing such diseases to continue in civilised communities. Everyone who has tried to debate the question of vaccination with the antivaccinationist has experienced Dr. Lyster's trouble in finding any scientific basis for their position. Most people will probably agree with him also in crediting them with high ideals and good intentions; the difficulty is to find some common ground for argument. Dr. Lyster concluded his address by throwing out a specific challenge to them to prove their faith. He asked if they would provide 24 volunteers who had not at any time received the protection of vaccination and who would enter into close association with severe cases of small-pox, taking any other prophylactic measures they chose. Any medical school, he was sure, would produce 24 vaccinated volunteers willing to take the same risks. It would be most satisfactory if the two parties could get together over some such definite scientific experiment. The present condition of partial vaccination is, as he pointed out, most expensive for the country; the 1895 Gloucester epidemic alone cost over £150,000 to the public funds. It would be an economy to spend a moderate sum on education of the doubting. One valuable form of education, as Dr. Fraser Harris suggested in moving the vote of thanks, would be to teach the history of scientific discoveries as part of the school curriculum. The education of the adult is being carried out, so far as its very limited funds permit, by the Research Defence Society, which deserves the support of all medical men and needs further donations and new members.

METROPOLITAN HOSPITAL SUNDAY FUND.

HOSPITAL Sunday will be held this year on June 28th, and a 4-page leaflet has been issued by the Metropolitan Hospital Sunday Fund setting out in statistical form a year's work in the hospitals and medical charities of London. This leaflet will serve a useful purpose in bringing prominently before the contributing public the vast amount of work done by our hospitals and their urgent need for financial support. Under the headings of the various districts of London actual figures are given of the number of beds to be occupied, the number of patients treated, and the available income. A short summarised table shows that 179,616 patients were admitted into the voluntary hospitals of London during the year 1924 and that the attendances in the out-patient departments and dispensaries numbered 7,429,183, the total cost being £2,887,778, towards which patients contributed £860,782, and it is interesting to compare this last figure with that for 1913, when it was £105,434. The ordinary income amounted to £2,590,378. The legacies received in 1924 amounted to £484,935. The average number of in-patients daily under treatment was 11,234. The information affords a text for clerical and lay sermons.

HELMINTHIASIS IN THE EGYPTIAN ARMY.

WORM infestation is very prevalent in Egypt. Out of its population of 13 millions 29,000 persons were treated in 1923, voluntarily, in the four anthelmintic annexes of general hospitals managed by the public health department. In the same year 75 per cent. of 1264 recruits for the army, 68 per cent. of 2352 serving soldiers, and 20 per cent. of 150 cadet officers were found to harbour these parasites, chiefly ankylostoma and bilharzia. Great is the consequent loss to the army and the State by sickness and invaliding, wherefore Major B. H. H. Spence, R.A.M.C., serving with the Egyptian Army, and in medical charge of recruiting, decided that it was time to deal with these worm diseases of recruits by mass diagnosis and treatment. He had his difficulties. Some urged treatment should be left till the men complained, some that treatment was unnecessary as a number of men did recover naturally, others that this was not the duty of the army but of the public health department. There was little objection from the army, whose senior officers felt the loss of a few days during treatment was nothing in comparison with the possible benefits. It was proposed to begin with 300 police recruits at Abbassia. The Egyptian commandant objected to experiments being carried out on his men, and only the urgently solicited support of the Ministry of the Interior carried the project through. The fæces and urine of the recruits were examined; those with ankylostoma got, next morning before breakfast, 5 c.cm. of carbon tetrachloride, and two hours later ½ oz. of magnesium sulphate. The after-effects were strikingly mild, far less than with thymol or oil of chenopodium; this treatment is also cheaper. Three months later 75 per cent. of these men remained completely cured. Those who had bilharzia ova in stools or urine got intravenous injections of sodium-antimony-tartrate on alternate days, three times a week for four weeks, 21 gr. in all. Here, again, symptoms were very slight, and 95 per cent. remained well three months later. The cost of treatment was under 1*s.* a head. The improvement in health of these recruits was so striking that within six weeks the entire permanent staff of the depôt had asked to be examined and treated, and, better still, the commandant, who had at first objected, admitted he had never before seen any batch of recruits remain so fit

under training, and benefit so rapidly from it. Indeed, he talked so much and so enthusiastically about it that it was heard of by the King of Egypt, who ordered that his bodyguard should be examined and treated forthwith. In all, treatment was extended to 1214 serving soldiers, while 969 were told off to be treated when the training period was at an end. The reports from regiments were that recruits this year did not faint on parade, nor did they, as formerly, complain of schistosomiasis. This very interesting story is detailed by Major Spence in a thesis for the degree of M.D. Edin., which appears with illustrations in the *Journal of the R.A.M.C.* for May, and is well worth reading, particularly if taken along with his previous paper, on the Wady Halfa Quarantine to protect the Sudan against worm-infected labourers from Egypt, in the same publication for last November.

DUODENAL CATHETERISATION.

THE merit of being the pioneers of this method of investigating the contents of the duodenum belongs, perhaps, to J. C. Hemmeter and Max Einhorn. Various observers have from time to time modified the procedure and the nature of the instruments required, and recently Dr. Alberto Trossarelli has published the results of his work in this respect at the Mauriziano Hospital at Turin.[1] He makes use of a rubber tube of 5 mm. diameter and 1·25 metre long, with a metallic perforated extremity. The tube is filled with an emulsion of barium sulphate which by rendering it opaque facilitates its passage by means of the screen across the stomach and through the pylorus, which is induced to relax by the introduction of sodium bicarbonate according to Jutte's method. The duodenum is reached rapidly, and by means of an ordinary glass syringe the barium emulsion is aspirated first and then the duodenal fluid; the small quantity of the former which remains in the tube in no way interferes with the ultimate investigations. The method is valuable both from a clinical and therapeutic standpoint.

As a rule, the duodenal contents consist of the duodenal juices, bile, and pancreatic juice, but by injecting 25–30 c.cm. of a 25 per cent. solution of magnesium sulphate contraction of the gall-bladder ensues and at the same time relaxation of Oddi's sphincter. Bile thus obtained may be of normal aspect or thick and dark, indicating the presence of cholecystitis, or containing a large quantity of mucous flakes, evidence of catarrhal jaundice. Fine sand points to biliary lithiasis, while a definite amount of blood suggests the presence of a growth either in the duodenum, biliary passages, or pancreas, and especially in the latter organ if the liquid is colourless, and there has been no colic and if pancreatic ferments are absent. Microscopic examination of the extracted fluid sometimes discloses the presence of a large quantity of polynuclear leucocytes with red corpuscles associated with mucus and cellular elements and various micro-organisms; such a condition indicates some inflammatory process, cholecystitis or choledochocystitis either simple or calculous if there are many cholesterin crystals seen. In catarrhal jaundice there may be an enormous quantity of epithelial cells accompanied by polynuclears and cylindrical cells of the biliary ducts. Chemical examination will show that there is complete absence of urobilin in obstructive jaundice, while on the other hand, it is increased in cases of abnormal destruction of red cells such as in hæmolytic jaundice, pernicious anæmia, and malaria. Usually the amount of albumin in the bile varies largely from case to case, and also in individuals who subjectively and clinically may be considered normal, and even varies in the same individual, according as the bile comes from the gall-bladder or biliary passages. Although some observers have claimed that the presence of a definite quantity of albumin is an indication of inflammatory processes of the bile passages, and particularly of catarrhal jaundice, Prof. Trossarelli's researches seem to show that the presence of albumin in the bile is an unsolved problem as an element of diagnosis and cannot be relied on in the absence of other symptoms. In fact, there are individuals who have never suffered from any kind of gastro-intestinal or hepatic disturbance whose bile contains as much albumin as those suffering from jaundice of various kinds. Examination for the presence of pancreatic ferments, diastase, trypsin, and steapsin has failed to afford any definite diagnostic help, partly because the duodenal fluid rapidly loses its fermentative power, whether kept in ice or in a thermostat at 37°C., and partly because the presence of bile largely increases its activity. It is only with the greatest circumspection that it is possible to admit a functional debility of the pancreas in the sense of a diminished excretion of ferments based on a quantitative examination of these substances in the duodenal juice.

Catheterisation is also useful in treatment, since by means of the tube various remedies can be brought into contact with the duodenal mucosa without having to pass through the stomach. One method of treatment which has given good results, particularly in cases of cholecystitis, hepatic calculus, ulcerative colitis, and in some cases of ankylostomiasis, consists in free duodenal lavage with astringents and antiseptics. Among the substances which have been used beneficially may be mentioned argyrol and protargol in 0·75 per cent. to 1·5 per cent., nitrate of silver 1 in 20,000, sulphate of magnesia and Jutte's solution, the latter composed of 0·9 per cent. sodium sulphate and 0·9 per cent. sodium chloride, using 1 to 1½ litres for a lavage. Excellent effects seem to have been obtained by these methods, resulting in the elimination of large quantities of biliary sand and even small calculi with disappearance of symptoms. In other cases, individuals suffering from intermittent fever of obscure origin, where after catheterisation the duodenal fluid was found to contain bacilli belonging to the paratyphoid group, a complete cure was obtained after two or three washings. This method has also been used with solutions of novarsenobenzol in syphilis and emetine in amœbic dysentery. Recently Bottner and Verner practised duodenal lavage with decoction of linseed and 5 per cent. magnesium sulphate in patients affected with pernicious anæmia. Out of six subjects treated they obtained clear improvement in five of them. Prof. Trossarelli's observations and researches demonstrate the great importance that duodenal catheterisation may acquire in the diagnosis and treatment of certain diseases of the liver, bile-ducts, pancreas, and duodenum. When technical difficulties have been overcome it will doubtless obtain its fitting place in practical medicine.

[1] Il Policlinico, Surgical Section, April 15th, 1925.

HOSPITAL PROVISION FOR CHRONICS.

NOT long ago Dr. E. P. Boas, medical director of the Montefiore Hospital in New York, brought to the notice of the New York Academy of Medicine the problem of the hospitalisation of the chronic case. There are, it appears, few institutions in New York where adequate care is given to the treatment of chronic disease, and at existing institutions there is little if any differentiation made between cases simply requiring custodial care and those which would respond to specialised medical and surgical treatment. The subject is further dealt with in a report by the Public Health Committee of the Academy which has just reached us. The type of case for which the New York hospitals under present circumstances do not arrange includes the various rheumatic diseases, cardiac and visceral troubles of many kinds and degrees, mucous colitis and other gastro-enteric diseases which do not readily respond to home treatment, disturbances of the neuro-muscular system, renal affections and the large group of orthopædic cases. Shelter is provided for those who have reached the incurable stage, but the need is felt for the care of those who are not yet hopeless. The staff should

it is argued, be made up only of physicians who are interested in the study and treatment of chronic disease. In a recent survey,[1] made at the instance of the same public health committee, it is stated that there are only three hospitals in New York with an entirely independent staff of physicians for the out-patients' department, and two of these are now contemplating a reorganisation which will bring about closer coördination between the hospital and the dispensary work. The survey closes with a definite indictment of the lack of "community policy," which, it is stated, has resulted in a heterogeneous accumulation of hospital services more or less suited to the needs of the community, but inelastic in their organisation, not fully adjusted to meet the economic status of the several classes of the population, and for the most part not coördinated with the existing hospital facilities in the city as a whole. This is an indictment which, with necessary amendments, probably applies to most hospital services everywhere, and one of the great works of the not distant future will be the removal of a state of things almost inevitable in the past, but which is now in danger of becoming an avoidable reproach.

UNPLEASANT BOOKS.

THE 135th anniversary dinner of the Royal Literary Fund was held at the Hotel Victoria on June 11th, when the Spanish Ambassador, Don Alfonso Merry del Val, presided and made in idiomatic English an admirable speech on the position of English literature in Spain. He spoke, he insisted, as a diplomatist representing the views of the Spanish sovereign, but the training of the English public school was apparent throughout. To the toast of literature proposed by Sir Robert Kindersley, Major Ian Hay Beith responded in eloquent terms, pleading the cause of all writers great and small and apologising for "a great deal of stuff that is about" by pleading that the unpleasant books for which there is a mania in certain circles represented a passing phase and one at which many people were already bored. Major Beith was as serious as he was funny in his excellent speech, and he put unpleasant books, we think, in their right place as a transient nuisance. Medical men at least must hope so, but this implies that the propaganda of the voluntary custodians of public morality must often advertise what had better have been ignored. The mass of illiterate readers—and the mass will always be illiterate—is only stirred to emotional attention by the primary human needs of birth and death and mating. The writer whose style falls just short of the living touch may gain effect by overstepping ever so little the conventional bounds of plain speaking and by producing the first degree of shock, which may be pleasant. The fact that the second degree brings nausea and satiety should not be forgotten.

THE MATHEMATICS OF INTERNAL RESPIRATION.

ON June 10th Prof. L. J. Henderson, of Harvard, delivered the first of a series of three lectures upon Blood as a Physicochemical System in the Physiological Institute of University College, London, Prof. A. V. Hill being in the chair. The size of his audience may be explained by the memory of a lecture before the Physiological Society in 1920, at which Prof. Henderson introduced his own particular method of attacking the physicochemical properties of the blood. The present series of lectures record progress made during the intervening five years. The lecturer began by summarising the various physicochemical investigations already performed on the blood. He pointed out the great importance of the work of J. Barcroft upon the dissociation curve of oxyhæmoglobin, since it demonstrated that one of the most important respiratory functions of the blood could be reduced to a mathematical problem. The subsequent investigations of A. V. Hill proved that it was possible to express the conditions in the form of a simple and now familiar equation. The next investigations of importance were those of Christiansson, Douglas and Haldane, who made clear the marked difference in the carbon dioxide absorption between oxygenated and reduced blood. Van Slyke, Wu, and F. C. Maclean's investigations of the various alterations in the water content of cells and plasma were also summarised. Prof. Henderson then described his own investigations into the relations between free, total, and fixed CO_2 of the blood, concluding that the following variables constituted the main factors in the physicochemical equilibrium of the blood: free oxygen (O_2), total oxygen (HbO_2), free CO_2 (CO_2), total CO_2($BHCO_3$) hydrogen-ion concentration of serum (H), volume of corpuscles (V), and the ratio of the anions within and without the cells (r)—i.e., Donnan's equilibrium factor. Previous work had suggested that these variables might be grouped in threes, when it would obviously be possible to define the five following equations:—

$$f_1.\ (H) \cdot (H_2CO_3) \cdot (BHCO_3) = 0.$$
$$f_2.\ (O_2) \cdot (HbO_2)\ (H_2CO_3) = 0.$$
$$f_3.\ (H_2CO_3) \cdot (BHCO_3) \cdot (HbO_2) = 0.$$
$$f_4.\ (H) \cdot (HbO_2) \cdot (r) = 0.$$
$$f_5.\ (H) \cdot (HbO_2)\ (V) = 0.$$

The possible permutations of the series evidently preclude any attempt at algebraic solution. Prof. Henderson's thesis might be summarised by stating that he believed that if some solution could be offered to these equations, the conditions of the blood's equilibrium would be defined. There are seven variables, and it ought to be possible, by fixing any two of the seven, to define the other five. In his second lecture Prof. Henderson dealt with a method of solution by means of a graphical representation on the following principle. A series of curves for the five equations can be plotted on the basis of two of the variables being fixed, and by superimposition a comprehensive diagram thus obtained. The result, however, would be a mass of confusion if the ordinary type of graph were constructed. Prof. Henderson has called to his aid the Cartesian nomogram, extensively used in mathematical circles, which has, in his hands, yielded information of the greatest value. To construct a nomogram for the equation $x+y=z$, the ordinate and abscissæ are first graduated in terms of x and y. The numerals on the co-ordinates are joined by means of straight lines with the result that a series of diagonals are produced, joining like values of x and y. These lines are numbered according to the values which they unite. To use the nomogram, perpendiculars are dropped from the particular values selected for x and y on the co-ordinates, and it will be found that the point of intersection will lie on one of the diagonals or contour lines. This will correspond to the value of z. By superimposing a series of contours upon such a Cartesian background it is possible to read off the points of intersection.

THE CONTROL OF THE TSETSE-FLY.

As against the hope expressed at the recent League of Nations Conference on Sleeping Sickness in Africa, that international coördination would do much to further progress in combating this disease, Prof. Warrington Yorke has rather focused attention on our own "kail-yard" in his paper read to the Imperial Entomological Conference on June 15th. In this paper he put forward a case for coördination of effort among our own African colonies in tsetse-fly investigation, principally in the experimental determination of the relationship of game to fly. The problem, he said, was to coördinate the four factors concerned in the disease—namely, (1) the pathogenic virus or trypanosome; (2) the population and the domestic stock; (3) the transmitting agent or tsetse-fly; and

[1] The Hospital Situation in Greater New York. G. P. Putnam's Sons. Pp. 356.

(4) the reservoir of the virus, or big game. "I do not hope for much," he said, "from the labour of the International Conference. Such a conference seems to me to be premature. I cannot believe that its efforts are likely to advance knowledge, and we hardly know enough at the present time to formulate regulations governing the international frontiers in tropical Africa. In my judgment much more is to be hoped from an inter-colonial conference and from the coördinated and sustained effort which it would be in the power of such a conference to ensure." The main difficulty, as he pointed out, which at present bars the way of progress in the investigation of the ravages of the tsetse-fly, is that energy is often misdirected; first, in that reports from isolated investigators frequently omit some essential information and thus do not permit of any inferences being drawn; and secondly, in that work, admirably conceived and executed, is often brought to naught by the fact that those who are conducting it go on leave without arrangements being made to carry it on. Further, it is sometimes difficult to realise the natural difficulties in the shape of marauding big game with which lonely investigators, inadequately supported by funds and personnel, have to contend, and Prof. Yorke is emphatic that the only hope of success is by substituting for isolated workers, whether entomologists or pathologists, large and well-equipped commissions having real funds at their command. He again urges, as he did five years ago at the first Entomological Conference, that entomological, medical, and veterinary research into the trypanosomiasis problem should be combined under one central organisation, supported by pooled contributions from all the African colonies interested, with adequate precaution to ensure continuity of work. Only by concentrating energies can experimental work be undertaken on a scale large enough to determine the relationship of fly and trypanosomiasis to game, and to solve the various problems enumerated in the report of the Glossina Sub-committee of the Imperial Bureau of Entomology. Prof. Yorke's stimulating criticism will, no doubt, receive respectful attention.

THE CHARCOT CENTENARY.

A SOCIAL evening of the Royal Society of Medicine was held on June 15th at 1, Wimpole-street, in celebration of the centenary of the birth of Jean Martin Charcot. Sir StClair Thomson, the President, in his prefatory remarks extended an especial welcome to several colonial and foreign guests who were present, and read a letter of appreciation to the Society from the Académie de Médecine of France. Dr. Farquhar Buzzard, President of the Section of Neurology, then gave a paper on the great French neurologist. After briefly indicating the milestones in Charcot's life, Dr. Buzzard said any spectator of the recent centenary celebrations held in Paris could hardly fail to wonder what manner of man this Charcot was, who still held, 32 years after his death, the esteem, the gratitude, and the affection not only of his professional pupils and successors, but of his countrymen at large. At a reception in the amphitheatre of La Sorbonne, at which the President of the French Republic was present, the proceedings were enthusiastically followed by an audience of between two and three thousand people, the majority of whom were not medical. From all corners of the earth pilgrims had come to listen and to add to the eulogy of the great neurologist. It was, he said, perhaps the most wonderful tribute ever paid to any medical man—not as a scientist, not as the author of some epoch-making discovery conferring lasting benefits on humanity, just a physician whose work and personality had made an imperishable impress on the science and art to which he had devoted his talents and his life. And, he added, it would be difficult to visualise our public and our Government joining so whole-heartedly in commemorating the birth of even a Jenner or a Lister; it might be doubted whether any medical man had ever been to any country what Charcot had been—and still was—to France. He continued: "Here was a man who, having been appointed quite early in his career chief physician to a large infirmary, the Salpêtrière, spent his life and energies in the service of the institution with the result that from being a building of merely historic and charitable interest it became the foremost school of neurology in the world. And yet Charcot has no great discovery to his name. The enormous amount of material which lay ready to his hand and which illustrated every form of advanced disease he studied not only in minutest detail, but with the artist's flair for accurate observation, for picking out essentials, and for giving them their due perspective. In an era devoted chiefly to the collection of pathological specimens and clinical observations he was second to none of his contemporaries as a collector, and he excelled all in his marvellous gift for marshalling the results of his labour and for giving them graphic presentation whether by pen or by word of mouth. It is not mere patriotism which makes us hesitate to place him beside Hughlings Jackson as a deductive philosopher, but we can boast of no physician who, in addition to making countless contributions to scientific knowledge, can compare with Charcot in his ability to attract students from all over the world by means of his inspired gift for exposition." To give orientation to Charcot's life and work it must be remembered that he was about 20 years younger than Duchenne, of Boulogne, who might rightly be regarded as the founder of French neurology. Duchenne and Charcot were to French neurology what Laennec and Trousseau were to French medicine as a whole. It might almost be said that Duchenne and Charcot discovered and entered a new field in which a rich harvest lay ready for the gathering. Dr. Buzzard then gave many intimate and vivid glimpses of Charcot at home and in hospital, and showed on the epidiascope several interesting portraits, including the centenary medallion, after the design of Mons. F. Vernon, the author of the Osler plaque. He also showed examples of Charcot's skill as a draughtsman and as a caricaturist.

The Centenary Medallion.
Reverse: Centenaire de la Naissance de J. M. Charcot, 1825–1925.

A vote of thanks to the lecturer was moved by Sir David Ferrier, who had himself been a pupil of Charcot over fifty years ago in the Salpêtrière. He referred to his master as one who had made an old poor-house ward into the most visited and most famous clinic in the world. A feature of the evening was the display, in the library, of books, documents, and drawings relating to Charcot and his work which had been prepared by Mr. Walter G. Spencer, the librarian. To his labours Dr. Buzzard paid a special tribute, and expressed the hope that the valuable collection which had been assembled might reach a wider public in some permanent form.

Sir James Berry was among those admitted to the honorary membership of the Inter-State Post-Graduate Assembly of America on June 4th.

ARRANGEMENTS for the International Congress of Radiology, to be held in London on July 1st to 4th, are now complete. Details of the advance programme will be referred to in our next issue.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

CXXVII.—THE TREATMENT OF HAMMER-TOE.

PART II.—OPERATIVE MEASURES.

ONE difficulty in these small operations is that of access. The operation must be done delicately, and a dressing applied which maintains complete correction without being cumbersome. To fix the deformed toe, and to hold the toes on either side out of the way, a stout fishing gut suture is passed through the pulpy end of each of the three toes. The ends of each suture are gathered up in three separate artery forceps, and the toes held rigidly and firmly out of the way of each other by the assistant. At the end of the operation, when the dressing has been applied—the toe-tip being left uncovered in order to watch the circulation subsequently—the retention sutures are removed. To assist precision and delicacy a rubber bandage should be used as a tourniquet, applied immediately above the ankle after the foot has been exsanguinated by a similar bandage, and is not removed until the dressing is dry and set. The best dressing is sterile ribbon gauze of the same width as the length of the toe, applied directly to the wound (which is sewn up with two or three fine interrupted fishing-gut sutures), and wound around the toe moderately firmly and closely (but without risk of strangulation), with thick collodion applied as the layers are increased. About a dozen or so layers are requisite, and the retention sutures hold the toes corrected for a few minutes while the collodion dries. The "splint" is rigid, and the circulation is noted to be satisfactory in the uncovered toe-tip before the patient leaves the theatre.

The dressing does not shrink subsequently. It is maintained for two weeks, and then cut off with strong scissors, and the skin sutures removed. A similar dressing is applied, and renewed again in another fortnight, taking six weeks in all. The patient can walk a week or two after the operation in this dressing, which is so rigid and small that the walking is harmless and comfortable. Another advantage of the sealed dressing is the avoidance of the thickening of the joint which is liable to persist for many weeks if an ordinary gauze dressing be used.

Excision of Head of Proximal Phalanx, with Removal of Cartilaginous Base of Middle Phalanx.

Of the several operations that have been advised from time to time for acquired hammer-toe excision of the head of the proximal phalanx, combined with the removal of the cartilaginous base of the middle phalanx, is to be preferred. No flexor tenotomy or division of the flexor capsule is done, and only just as much of the head of the proximal phalanx is removed as will enable the toe to be made *quite* straight on strong passive stretching into extension. There should be no tension tending to reproduce flexion when the operation is finished. An ankylosis (arthrodesis) of the proximal joint is desired. If the base of the middle phalanx is left untouched, fibrous rather than bony ankylosis is likely to result, with some risk of recurrence of the flexion deformity. The dorsal incision is elliptical, of about three-fifths the width of the toe, and the redundant skin with the dorsal corn is removed. There is no need to damage the lateral digital arteries. If the deformity be severe, the dorsal expansion of the extensor tendon should be removed with the elliptical piece of skin; if not, it may be preferable merely to incise the tendon longitudinally, to give access to the head of the bone. But the excision is more difficult to do delicately in this case. The head of the bone is best removed by fine-pointed bone-cutting forceps, and the neck of the bone need not be fragmented. A fine chisel or stout, small knife is used to denude the base of the second phalanx of its cartilage. The skin suturing helps to maintain subsequent correction.

In operating on the congenital type, the proximal or terminal joints are similarly corrected, according to the site of greater flexion. It is never necessary to correct both joints. To correct the adduction and rotation of the terminal (one or two) phalanges, the elliptical excision of the skin will be placed somewhat to the outer side of the joint, at the site of the maximum bend. The dorsal expansion of the tendon is removed. In these tiny toes the joint excision is best done with a small, stout scalpel. The skin wound can be sutured in such a way as to assist in correcting flexion, adduction, and rotation. Two or three toes can be operated upon at the same time.

Alternative Operations.

The alternative operations may be mentioned. Amputation of the whole second toe in the acquired variety is not usually desirable unless its terminal nail portion is grossly deformed, or the toes on either side so rigid in their position that there will be no longer room for the corrected toe in its proper place, or unless, as in neglected cases, lateral corns exist. The objection to total amputation is that the frequently associated hallux valgus is liable to increase subsequently, from pressure of the stocking and want of the preventive effect of the second toe. Amputation of the terminal phalanx alone would in most cases leave an awkwardly dorsiflexed proximal stump. In some cases, however, where the hammer deformity is not giving trouble from pressure on a dorsal corn, but where the nail is thick and distorted, with painful terminal corn, the terminal phalanx can be amputated at the end joint, with removal of the bone and nail bed, by the palmar flap method.

Total removal of the proximal phalanx has been advocated, leaving a short, stumpy toe which would serve to prevent the hallux valgus from increasing, but with no other function. The writer has no experience of this method, nor does it appeal to him. In milder cases of acquired deformity, subcutaneous division of the flexor tendons and capsule may be done, followed by passive correction and splintage as after the open operation, but there is some risk of relapse. Flexor tendons do not unite after tenotomy, and thus the only important function of the toes, flexion, is permanently lost, which is not the case after excision by the dorsal method.

In any operative method extension contracture of the metatarso-phalangeal joint must also be overcome by subcutaneous division of the extensor tendons, otherwise relapse into flexion at the distally corrected joint is fostered. After the tenotomy the toe is forced into flexion at the metatarso-phalangeal joint, and retained thus in the dressing while the joints of the toe are kept fully extended.

Correction of "Clawed" Toes.

In the correction of "clawed" toes—i.e., those associated with pes cavus and boot-caused deformities—attention is directed chiefly to the extension of the metatarso-phalangeal joints rather than to the flexion of the distal joints. In pes cavus the toes are dealt with after the arch has been flattened sufficiently by the Steindler operation. The various procedures for correcting the toes are: (1) Division of dorsal extensor tendons and capsules, and tethering the toes down to a slotted and looped sole-plate for four to six weeks, by night and day, followed by active and passive exercises and electrical stimulation of the intrinsic muscles. This is the older method, and is liable to result in relapse after some months. (2) Transplanting the dorsal extensor tendons into the necks of one or more metatarsals or into the dorsum of the foot. There are several modifications of this method. (3) Transplantation of the long flexor tendons from the terminal to the proximal phalanges, a method first advocated by the writer. The hyper-extension at the metatarso-phalangeal joints is corrected by one or other of these methods, while the flexion of the toe-

joints is overcome by passive stretchings and active exercises, perhaps assisted by tenotomy of the flexor tendons. In deformed toes associated with hallux valgus the excision and tenotomy methods as described for real hammer-toe may be carried out on those toes which are causing painful disability.

In retentive splintage after correction, when the toes need to be held flexed in the metatarso-phalangeal and extended in the more distal joints, the sealed dressing and looped sole-plate methods described above are more practicable than the use of plaster-of-Paris in which it is difficult to obtain precise correction without risk of producing pressure sores.

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Special Articles.

THE MILK-SUPPLY AND ITS IMPROVEMENT.

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III.*—REMEDIES TO IMPROVE THE MILK-SUPPLY.

THE final report, issued in 1919, of the Committee on the Production and Distribution of Milk, emphasised what all authorities on the subject are agreed upon, that the present milk-supply is highly unsatisfactory. Since that date the only Act passed affecting milk has been the Milk and Dairies (Amendment) Act, 1922, which in most essentials leaves the problem alone. In addition to questions of chemical purity, which cannot be dealt with from limits of space, there are three different bacteriological problems—i.e., freedom from tubercle bacilli, general bacterial cleanliness, and removal of the liability to spread acute infectious disease. With so many problems it will be obvious that there can be no simple short cut to a satisfactory supply, but that it is a problem which must be surveyed from many angles.

More Effective Legal Control.

The need for additional legal powers has been demonstrated in the previous article. There is, however, another Act upon the Statute-book, the Milk and Dairies (Consolidation) Act, 1915. This is a unique measure, since (with some modifications) it is a repetition of and substitution for the Milk and Dairies Act, 1914, which, although passed, never came into force, and, like it, the 1915 Act has been postponed and has never come into operation. The 1922 Act further extended its date of coming into force to Sept. 1st, 1925. This Act has been kept in cold storage for ten years, and there is nothing to prevent a further Act from still further extending the period of hibernation.

From the point of view of the milk-reformer this Act cannot be accepted as likely to solve all the existing milk deficiencies. On the other hand, it contains a number of valuable and important sections. The mother Bill was in the end an "agreed" measure. An "agreed" Bill in the sphere of public health usually means that to get it passed many of the best clauses have either to be withdrawn or accepted handicapped with "safeguards" which make them unworkable or so slow in operation that they fail to do much good. It is cumbersome in working, since it gives both the smaller local authorities and county councils powers which are in part concurrent. Its chief value is in Section I. which gives the Ministry of Health power to make Orders which, if fully made use of, would go a long way legally to ensure clean milk. These powers are coupled with the "safeguard" that they have to be made with the concurrence of the Board of Agriculture and Fisheries. These powers are, therefore, very much in the nature of a dark horse of possibilities but hardly a certainty, perhaps not a starter. The need for a new Milk and Dairies Order to control method in milk production has been amply demonstrated in my last article, and under Section I. of the 1915 Act an effective Order is possible. The Draft Milk and Dairies Order, 1915, proposed to be made under the Act was very valuable, and it is to be hoped that any Order issued will be along the lines of this Order, with additions dealing with methods of clean milk production.

While education is more important than legislation in connexion with an improved milk-supply, more definite legal requirements as regards milk production and handling are in themselves of great educative influence when tactfully carried out. No experienced milk-reformer wants drastic enactments, and the essentials are very simple things. Too zealous workers have done much harm, and led agricultural interests to take fright at what are to them, and indeed in reality, impossible requirements. If, however, it is right to require cows' udders to be clean and milkers to have clean hands and to milk in cleanly fashion, and for churns to be sent locked, why not say so legally and have done with it? There is no dispute as to the essentials.

In my opinion it is for the medical profession to press for better control, either by the passing of a suitable Milk Act or, failing that, by no further postponement of the operation of the 1915 Act. It is impracticable to discuss all the sections of this Act, but as regards tuberculosis they demand a little more consideration.

The Prevention of Human Tuberculosis from Milk.

Everyone who has made a study of the problem of the eradication of bovine tuberculosis is aware of its extreme complexity and difficulty, in part due to its magnitude, in part to the large financial interests involved, in part to the fact that it concerns two Government departments looking at the problem from different angles. Fortunately it is equally obvious that it is a solvable problem, while it is agreed that progress can be achieved along several lines. It is an agricultural even more than a public health question, and while the two are not identical they are interdependent. It is impracticable to discuss these lines of progress and remedies in detail here, and, indeed, they would involve a very large number of purely technical considerations. Fortunately there are many valuable papers available on the subject.

Just as with human tuberculosis, it is obvious that drastic measures are impracticable and would defeat their object, and that progress can only result by advancing along definite and approved lines. The two most approved lines have been (*a*) the thorough separation of healthy from tuberculous animals and the rearing of a healthy non-infected herd; (*b*) the elimination of cases of "open" tuberculosis in bovines as the cases which most spread the disease and mainly infect the milk-supply.

Experience has shown that much can be effected along these lines. Judging from past legislation the most probable lines of administrative action will be a re-enactment of the 1914 Tuberculosis Order, together with the tuberculosis clauses of the 1915 Act. These clauses in the 1915 Act, if they become effective, will give a good deal of power, but they seem complicated in working and, while they may prevent some infection from tuberculous milk, will do little to reduce the amount of bovine tuberculosis. Their greatest hope in this direction is in the power they give for the appointment of whole-time veterinary inspectors and for bacteriological examinations. The Tuberculosis Order of 1914 is an Order of the Board of Agriculture which was suspended at the onset of the war and has not been re-enacted. In the words of the covering circular, the Order "aims at securing the destruction of every cow found to be suffering from tuberculosis of the udder, or to be giving tuberculous milk, as well as of bovine animals which are suffering

* Parts I. and II. appeared in THE LANCET of May 23rd and 30th and June 6th respectively.

from tuberculosis with emaciation." In other words, it follows line (*b*) mentioned above. To detect these animals reliance was placed upon notification by their owners to the local authority (the authority under the Diseases of Animals Act, 1894) and also on notification from veterinary surgeons in the course of their practices. Compensation was paid for these animals when slaughtered on an approved scale, so the cost was heavy.

Since many writers—veterinary and others—are pressing for the re-enactment of this Order, presumably along the original lines, it is of some importance to consider whether it is useful from the public health point of view. In theory the Order should be a potent weapon to reduce tubercle bacilli in milk, and reduce the amount of bovine tuberculosis. As operated, however, my experience and inquiries were that it was doing but little along these directions. My primary objection is that it was not being used as a preventive measure, although this may be true in some cases, but as an agricultural measure to pay compensation for these special tuberculous animals. Unless worked on preventive lines in the great majority of instances the cases of udder tuberculosis and "wasters" will not be detected and slaughtered until *after* they have been actively excreting tubercle bacilli for long periods. No compensation should be payable for any animal if the conditions could reasonably have been detected at an earlier stage. Two postulates are, I think, essential. First, that it must not be run by the County Agricultural Committee as a purely agricultural measure without any coöperation with the public health authorities (this was the way it was worked in Somerset), but must be looked at and worked as a preventive measure. Secondly, the veterinary inspectors who visit, examine, and report must be *whole-time* officers of the authority working along preventive lines and either under, or closely coöperating with, the Public Health Committee. Unless these two postulates are fulfilled the compensation under the Order is, in my opinion, largely wasted, as it will neither reduce the amount of bovine tuberculosis nor diminish the infectivity of the milk-supply.

While the precise lines of advance are a matter for the experts to decide, it is for medical opinion to enunciate that the present position is a reproach to public health and an economic disaster to the country.

Universal Controlled Pasteurisation.

It was pointed out in Article I. that the term pasteurisation covers different processes and that ordinary uncontrolled pasteurisation cannot be relied upon to do anything beyond prolong the life of a bacterially contaminated milk. On the other hand, a definite case can be made out for adopting a system of scientifically controlled pasteurisation as the best means of securing a safe milk-supply. When the arguments in favour are dissected they amount to three: (*a*) The difficulties in the way of preventing the contamination of milk with pathogenic organisms are very great, and even the best safeguards are but partial. Complete safety can only be attained by submitting the milk at a stage before distribution to treatment by heat adequate to ensure the death of any pathogenic bacilli possibly present. (*b*) Properly carried out such treatment does nothing to damage the nutritive or vital properties of the milk. (*c*) Pasteurisation is much cheaper than a system of efficient dairy inspection. While the last is agreed upon by all, upon the first two points there is by no means unanimity.

Objections to such a scheme of universal pasteurisation of milk are three-fold. In the first place, many scientific observers do not acquiesce in the view that efficient pasteurisation does not damage the milk. In the second place, its success depends upon efficient working, and in work-a-day practice it may fail lamentably. The apparatus and connecting pipes may not be kept clean and may add bacteria, the machinery may break down or be improperly used. If relied upon as the sole safeguard it may fail us, and I have studied several outbreaks of food poisoning due to milk, in which the outbreak was directly associated with the use of milk which was supposed to have been pasteurised, but which for trade reasons had not been so treated. The danger of inefficient pasteurisation is a real one if other than clean milk is allowed to be pasteurised, since the operator knows that highly contaminated milk may be damaged by heat, and his bias is to underpasteurise. In the third place, we have to realise that as adopted in this country it is a substitute for cleanliness. Its advocates deny this and talk about it as a temporary measure which will in no way retard progress to obtain a cleaner milk. This is an attitude with which I find it impossible to concur. There is no need to pasteurise clean milk to enable it to be delivered to long-distance customers, a fact which has been repeatedly demonstrated. It did not become adopted in England as a public health measure but as a trade process to enable bacterially contaminated milk to be conveyed unsoured to the consumer, and its further extension will continue the process. It costs money to pasteurise, and the wholesale distributors are not going to pay this and also pay more to get clean milk. It is true that milk on the verge of going sour cannot be pasteurised, but milk containing a million or so of bacteria per c.cm. is being pasteurised every day.

To my mind the advocates of pasteurisation spoil their case by overstating it. A really strong case can be made out for universal pasteurisation on the lines that the difficulties and expense of obtaining a pure safe milk are too great, and that it is cheaper and equally satisfactory to obtain it fresh and therefore not excessively contaminated, and pasteurise it under strictly defined and rigidly controlled conditions—such milk to be labelled as pasteurised, re-heating forbidden, and all other than scientifically controlled pasteurisation methods prohibited. All milk sold as fresh milk not to have been subjected to any treatment. The balance of scientific evidence is favourable to the view that it is possible to select time and temperature conditions that will not damage the milk on the one hand, and yet will destroy with reasonable reliability non-sporing pathogenic bacilli. Such a contention is a confession of failure, in that it says in effect that we cannot apply to milk what we apply to other foods, but it is a perfectly logical one, and it is arguable that it is the best solution of a difficult problem. Unfortunately, pasteurisation is never presented in this form, but always with promises of benefits which it is unable to perform and without safeguards which it is necessary to provide.

In some parts of the U.S.A. it is worked in connexion with adequate measures for controlling the purity of the supply at the source, bottling under controlled conditions and supervision throughout.[1] That, again, is logical, but is not the way it is advocated in England. We are very far indeed in this country from any system of adequate supervision over production together with controlled pasteurisation, and anything less is unsafe and inexpedient.

[1] As an interesting corollary to these remarks I notice that Dr. C. J. Hastings at the World's Dairy Congress, 1923, talked about the objection to pasteurisation as being for the most part a pitiful exposition of ignorance, but he then went on to describe as a matter of course a complete inspection system, bacteriological examinations, and the summary rejection of all dirty or below standard milk. In this country the advocates of pasteurisation do not couple all this together.

(To be concluded.)

BRISTOL HOMŒOPATHIC HOSPITAL.—Princess Helena Victoria recently opened this hospital, the gift of Mr. W. Melville Wills, in memory of his son, Captain Bruce Melville Wills, R.E., who was killed in the war. The whole of the wards face to the south and each ward has a sun balcony; a system of floor warming has been installed which obviates the necessity for radiators and leaves the wards unobstructed. The hospital has been under construction since 1921, when the Prince of Wales laid the foundation-stone.

PROCEEDINGS OF THE ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.*

EVIDENCE OF THE BRITISH MEDICAL ASSOCIATION

(*continued from p. 1250*).

The Right to Admission to the Panel.

(Q. 15214.) The witnesses said that they would strongly oppose any limitation on the right of a registered practitioner to enter the insurance service, whether the present general practitioner service or the proposed extended service of consultants and specialists (assuming in the latter group that the doctor had the necessary status). Dr. Cox said that the statement made by a previous witness before the Commission that the Association had agreed to such a limitation was wrong and must have been made under a misapprehension.

Regulations.

(Q. 15216–20.) With regard to the suggestion in the evidence that complaints should in the first instance be submitted to the chairman of the local medical committee and the chief administrative medical officer of the area, it was asked whether this would not place the decision of these questions too much in the hands of the profession, and whether some lay element was not desirable. Dr. Brackenbury said that if questions of behaviour as between doctor and patient were eliminated from the complaints procedure and regarded as covered by the freedom which now exists for the doctor or patient to terminate the relationship at any moment, the inclusion of a lay element, even in the court of first instance, would not be objectionable.

Dr. Bolam said, with regard to regulations generally:—

(Q. 15216.) The profession as a whole feels very strongly (and in particular those outside the Insurance Scheme at present feel that if they are to participate in it at any future time) that it is necessary that any regulations shall only be in regard to administrative procedure and the arrangement of it, and not anything which would interfere with the mode of treatment given by the doctor or the relationship between the doctor and patient in a medical sense.

There had been a tendency on the part of the Ministry of Health recently to interpret the regulations in a manner which gave rise to apprehensions.

On another aspect, Dr. Brackenbury said:—

(Q. 15220.) Where the machinery agreed upon for judicial inquiries has been complied with—where the Insurance Committee has adopted one particular decision—it seems to us entirely improper that the court of appeal—the Ministry—should step in and write a letter to that Insurance Committee suggesting they should alter the charge and proceed differently.

Medical Institutions.

(Q. 15221–15296.) With regard to medical aid societies and other approved institutions, Dr. Cox explained that it was not so much the fact of payment by salary which was objected to as the control of a lay committee. He said:—

I do not know of any lay committee which has the employment of medical men, with so little sense of real public responsibility as the committees of these particular services. It is a very different thing for a medical man to be employed by a public authority—a responsible public body—and to be employed by a body connected with one of these institutions, the calibre of which cannot be at all the same, and over which there is nothing like the same amount of public check. We are against these institutions because we know they do not get the quality of medical men which is prevalent in the ordinary panel system.

As regards the institutions in the colliery areas of South Wales, he said:—

I have no hesitation in saying that there their influence has been very detrimental indeed to the medical service given to the public in those areas. For nearly 30 years—long before the Insurance Act came in—we have been fighting these institutions, because they proceeded on what we thought were entirely wrong lines, the theory being that the miner, who is, of course, a very politically-minded person and who believes that he is able to manage services of all kinds, thought that he could manage the doctor. They deliberately adopted the idea of the employment of a doctor as a whole-time servant, who should be the doctor of the committee and not the doctor of the individual person, which we think is wrong; it is fundamentally against the provisions of a good medical service.

The Proposed New Authority.

(Q. 15297–309.) The Association suggested that cash benefits should be separated from treatment benefits and the latter administered by a new authority which would control also all other health services. The profession would be satisfied that the new authority should be a statutory committee of the county council or county borough council, though these would not be always in their present form the best areas for the purpose.

(Q. 15299.) The proposal, then, would mean the disappearance of the Insurance Committee and the unification under the new authority of the medical services at present administered by the Insurance Committee, the public health authority, the Poor-law guardians, and the education authority. As chief officer of the new authority you would have an administrative medical officer of high standing both in medical knowledge and in administrative work, who I suppose would be a salaried officer?—Yes.

Dr. Brackenbury pointed out, however, that they did not contemplate this engagement of salaried officers for treatment purposes at all, except for a limited period of time for tuberculosis and venereal disease services and for infectious diseases hospitals. Their general view was that:—

(Q. 15300.) The actual treatment work as distinguished from administration, or we may even say inspectorial work, would be done by part-time officers either on the insurance system for domiciliary attendance or on the sessional system for the treatment clinics. The necessity for many of the treatment clinics will be done away with by the provision of the family doctor for the dependants of the insured person.

(Q. 15305.) As regards the financing of the enlarged health service, the funds would be derived, it was thought, from the same sources as at present, but not all pooled. The income from the insurance scheme would be preserved as a separate fund, the new authority receiving a capitation payment in the same way as the insurance committees do at present.

The general scope of the extended scheme proposed by the Association would be found not inconsistent with the main lines of the proposals of the Consultative Council to the Minister of Health in 1920, but corresponded rather more closely to the Scottish than to the English report.

Certificates of Incapacity.

(Q. 15310–11.) The words "incapable of work" on the certificates gave rise to much difficulty, and the words "unfit for your work" would be more suitable, with a provision that when the Approved

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* In previous articles the proceedings of the Commission were reported under the following headings: Introductory Note; The Scope of the Insurance Scheme (see THE LANCET, Jan. 31st, pp. 247–8); The Provision of Medical Benefit (Feb. 7th, pp. 301–3; Feb. 14th, pp. 355–6; Feb. 21st, pp. 403–5); Financial Provisions of the Act (Feb. 28th, pp. 454–7); Medical Certification and the Regional Medical Staff (March 7th, pp. 508–9); The Approved Societies and the Money Benefits (March 14th, pp. 564–5; March 21st, pp. 623–4); Evidence of the Hearts of Oak Society (March 28th, pp. 677–9); Evidence of the National Conference of Industrial Assurance Approved Societies and of the Manchester Unity Approved Society (April 4th, pp. 731–3); Evidence of Independent Order of Rechabites, of Rational Association Friendly Society, and of Miners' Societies (April 11th, pp. 784–6; April 18th, p. 839); Evidence of Mr. Alban Gordon (April 18th, pp. 839–40); Evidence of Joint Committee of Approved Societies, of Stock Exchange and Lloyds' Health Insurance Societies, and of Group of Catholic Approved Societies (April 25th, pp. 889–91); Evidence of the National Insurance Beneficent Society (May 2nd, pp. 943–4); Evidence of the British Medical Association (May 9th, pp. 993–5); Evidence of the British Dental Association and other Dental Organisations (May 16th, pp. 1044–6); Evidence of the Insurance Committees (May 23rd, pp. 1097–8); Evidence of Various Approved Societies (May 30th, pp. 1135–6); Evidence of the British Medical Association (June 6th, pp. 1184–6; June 13th, pp. 1248–50).

References to the paragraphs in the printed statements issued as appendices to the reports of the oral evidence are given thus: "App. X. 69," and references to the oral evidence thus—Q. 1369.

Society felt that the question properly arose, the doctor could be asked, "Is he unfit, not for the particular work, but for any work?"

The Rural Practitioner.

(Q. 15326–35.) Dr. J. P. Williams-Freeman gave evidence as to the disadvantages from which the rural practitioner suffered. He suggested that there should be the same general capitation fee for all practitioners alike throughout the country, but that in certain sparsely-populated districts this should be augmented so as to raise the amount of money paid for insured persons to a proper proportion, "which is generally taken to be one-third of what ought to be a reasonable remuneration for an educated medical man."

The witness agreed that a great part of the country district is now within the scope of operations of town doctors owing to the coming of the motor-car, but said that a certain amount of village practice ought to be kept going, because he believed this to be necessary for the population. Dr. Williams-Freeman outlined the way in which a specialist service could be provided for rural areas on a market town basis by means of ambulances and clinics.

EVIDENCE OF OTHER MEDICAL BODIES.

The Medical Practitioners' Union.

(App. XLVIII.; Q. 15337–744.)

Evidence was given by Dr. E. A. Gregg, President; Dr. Gordon Ward, Vice-President; Dr. A. Welply, Secretary; and Mr. Charles Davis and Mr. S. G. Davis, solicitors.

The Medical Practitioners' Union has between 3000 and 4000 members, and claims to represent the more progressive opinion of all sections of the profession. It suggests that its expressed opinions are such as can be translated into legislative action within a reasonable period, basing this claim not so much on the favourable reception of its draft statement of evidence by the profession as on its knowledge of professional ways of thought and of the past relationships between the State and medical men.

A State Medical Service.

The evidence emphasises the importance of maintaining the advantages of private practice, and suggests that it is right and proper that the provision of medical services by the State should extend until the widest possible benefits of preventive and curative medicine are available for those persons who without State assistance would be unable to obtain them. Those to whom benefits might usefully be extended comprised a very large proportion of the community, and the most economical and satisfactory way of financing such an extended service might be by abandoning individual contributions in favour of direct provision from the National Exchequer. The Union is sceptical as to the alleged educative and moral value of the insurance elements in the existing scheme.

The Disappearance of Approved Societies.

The Union is of opinion that the system of Approved Society administration has proved unsatisfactory and that the Approved Societies as such should no longer be continued, and accordingly suggests: (1) That all extra cash benefits should be abolished as from a certain date and all surpluses should from that date be held by the State on behalf of contributors; (2) that insured persons should be transferred from societies to county committees; (3) that the old age pensions and unemployment benefit machinery should be amalgamated with that part of the county committees' work which dealt with sickness benefit; and (4) that five years hence there might be an extension of medical benefit to a larger community.

The Ministry of Health Condemned.

A lengthy statement is embodied in the evidence in support of the following condemnation of the Ministry:—

It is the deliberate and considered opinion of the Union that a great State department, the Ministry of Health, has shown itself to be incapable of appreciating or unwilling to act upon those elementary principles of justice which have made our courts of justice the pride of all English-speaking peoples.

As regards the whole of the complaints and appeals machinery, it is claimed that:—

The delay and denial of justice is so gross and deliberate and the elementary rights and liberties of the individual are held in such low esteem that insurance practitioners are justified in demanding, as they do demand, that the whole system shall be swept utterly away.

Other Recommendations.

The evidence also embodies proposals for reconstruction of the system of certification which, it is said, is even more burdensome than record-keeping as at present required, both being a menace to the therapeutic success of the system. It is also contended that the methods by which the views of insurance practitioners are ascertained and presented, whether to the Ministry of Health or before the Royal Commission, are in many respects unsatisfactory and call for reform, and that the previous negotiations in regard to remuneration have been unsatisfactory. A new basis for calculating and increasing the remuneration of panel doctors is proposed.

With regard to maternity service, it is suggested that National Health Insurance funds could be most profitably employed by means of grants to local authorities, voluntary hospitals, and district nursing associations.

(*To be continued.*)

Public Health Services.

REPORTS OF MEDICAL OFFICERS OF HEALTH.

THE following are some of the health statistics for 1924 of a group of two county boroughs and four boroughs:—

Name of district.	Mid-year population (R.G.).	Birth-rate.	Death-rates per 1000 of the population.				Death-rates per 1000 births.		
			All causes.	Tuberculosis.	Cancer.	Resp. diseases with influenza.	Neonatal mortality.	Infant mortality.	Maternal mort. from childbirth.
Blackburn C.B.	127,640	15·5	14·2	0·87	1·4	4·1	30	84	5·0
Ipswich C.B. . .	82,710	17·3	9·7	0·97	1·4	1·8	—	52	2·8
Ealing B. . .	68,370	14·3	11·1	0·75	1·4	2·1	23	47	5·1
Macclesfield B.	32,886	17·0	13·2	0·90	1·9	1·8	32	85	1·8
Shrewsbury B.	31,660	19·4	11·9	1·20	1·3	3·2	22	46	4·8
Margate B. . .	28,380	14·6	11·2	1·02	1·7	1·7	—	39	0·0

C.B. = County Borough. B. = Borough.

Blackburn.

Dr. W. Allen Daley, in his fifth and valedictory report for Blackburn, indicates the progressive attitude adopted by his health committee towards public health matters by recounting some of the measures which have been adopted during his five years of office. An antenatal clinic was established in 1921, and during 1924 293 expectant mothers made 700 attendances. A six-bed maternity hospital was established in August, 1921, to which 122 cases were admitted in 1924. Three new child welfare centres have been established with attendances numbering 20,241 in 1924. The work of the V.D. centre has been associated with the child welfare department by placing the woman medical officer for child welfare in charge of the treatment centres for women and children. District nurses attend home-treated cases of measles, whooping-cough, ophthalmia neonatorum,

tuberculosis, diarrhœa, and other diseases sent to them by the health committee. A band of 60 voluntary workers, mostly British Red Cross, do excellent work in assisting at the child welfare centres. In February, 1923, an X ray apparatus was purchased for the tuberculosis dispensary and pneumothorax treatment was begun. A sanatorium school for pre-tuberculous children and a scheme for the prevention and treatment of crippling were put into operation during the same year. New lairage accommodation has been provided at the public abattoir and the number of private slaughter-houses has been reduced from ten at the end of the war to two in 1924. The farms in the borough have been modernised. "Certified" milk has been on sale since 1921 and the demand for it is constantly increasing. "Grade A" milk is obtainable from three farms and the demand exceeds the supply. Three "clean milk" competitions have been held. A covered milk container with a tap at the bottom has been devised and is in use in milk sale shops. Parliamentary powers have been obtained for the registration of premises where meat food products are prepared. A scheme has been adopted for improving the welfare of the blind by assisting the workers at the workshops of the blind and coöperating with the society for visiting the blind. In 1920 there were 9329 privies and pail-closets; all of these, except 174 in the suburbs of the town, have been converted into the ordinary water-closet. A scheme is now in operation for the substitution of galvanised-iron bins for ashpits. Attention has been paid to the hygienic condition of cinemas and other places of entertainment. A comprehensive scheme for educating the general public on how to maintain their health has been in operation since the end of 1920. In connexion with this there have been exhibitions, many cinema and other lectures, health poster competitions, newspaper articles, health sermons, and other activities. One is not surprised that Dr. Daley congratulates his health committee and council on their policy.

Ipswich.

Dr. A. M. N. Pringle gives some particulars of the behaviour of the tuberculosis death-rate in Ipswich. From 1841 to 1870 the female death-rate from pulmonary tuberculosis exceeded the male, but from that time onwards it has been consistently and considerably lower. During 1921 and 1922 there was little difference between the two rates, but during 1923 and 1924 the female rate has only been two-thirds of the male. From 1840 up to the present time there has been very little difference between the male and female rates from non-pulmonary tuberculosis in Ipswich. The rate for cancer reached its highest recorded point in 1924, the male rate being 1·48 and the female 1·36. Another table shows the decline in infant mortality. From 1840 to 1870 the infant mortality-rate in Ipswich averaged about 170; from 1870 to 1900 it averaged about 150; during the three years 1922–24 it has averaged 52. A remarkable feature of the rate during 1924 was that there were no deaths of illegitimate children. The recorded births of illegitimate children numbered 64. Dr. Pringle points out that since 1915 diarrhœa has been "wiped out" as a serious factor in the production of infant mortality. The very high case-fatality of puerperal fever shows that all the cases are not being notified, and Dr. Pringle suggests the advisability of having all cases of puerperal pyrexia of 100·4° F. or over (maintained for 24 hours) notified. There is ample hospital accommodation for all cases of puerperal fever either in the East Suffolk Hospital or in the isolation hospital.

Ealing.

Dr. Thomas Orr reports that all the 14 midwives practising hold the certificate of the Central Midwives Board. The midwives are under the supervision of the county council, but they frequently refer cases to the borough maternity and child welfare centre. About 180 maternity cases from Ealing were admitted to the Chiswick and Ealing Maternity Hospital during the year and the contributions made by these patients amounted to £819 17*s.* 6*d.* Eighteen licences were granted to one milk company to sell "pasteurised" milk at their various premises; 19 licences were granted (18 to one company) to sell "Certified" milk; and one licence to sell "Grade A (tuberculin-tested)" milk. The housing difficulties still remain acute. Twenty-eight flats erected by the town council provided for some of the most urgent cases. In his school report Dr. Orr points out that the erection of the Grange School marks a recent development of school construction. In 1905 the schools built had a central hall with classrooms round it. The next development was a central hall with one outside wall and the classrooms arranged round the other three sides. The Grange School is a single range of classrooms in the form of the letter E with the central arm left out. Along the inner side of the building is a broad corridor with a glass roof and on to this corridor the whole of the classrooms open in such a manner as to form when required an open-air school. The two centre classrooms, by the folding of a glass and wood partition, can be converted into a large assembly hall. Dr. Orr states that the head teachers use every opportunity to teach in the open air when weather permits, and he regards the new Grange School as a noteworthy step in furthering open-air education.

Macclesfield.

Dr. J. Hedley Marsh mentions that there were nine notifications of encephalitis lethargica from February to August with three female deaths at ages 8, 13, and 71 respectively. A circular was issued during the year to all milk producers on the production of clean milk, based on an article by Mr. A. T. R. Mattick, of the Reading Institute. The report contains a large number of analyses of the town's water, many of which are not altogether satisfactory. A new impounding reservoir with a capacity of 134 million gallons has been begun.

Shrewsbury.

Dr. H. Gordon Smith makes his fifth and last report before taking over his duties at Lincoln. Shrewsbury has a dual water-supply. The drinking water is obtained from a deep well about two miles outside the borough, is pumped into a reservoir, and reaches the town by gravitation. It is supplied to the inhabitants by means of standpipes in the streets. The river water is laid on to the houses, but is not intended for drinking purposes. To minimise risk, however, this river water is chlorinated and filtered through Bell's pressure filters. Six cases of encephalitis lethargica were recorded, four being fatal. Dr. Smith claims that probably no other town of similar size to Shrewsbury has tackled the housing problem so seriously and so successfully. During 1924 107 houses were erected with State assistance, 54 by the local authority and 53 by private enterprise. The lessening of pressure actually enabled eight insanitary houses to be closed during the year.

Margate.

Dr. Rowan McCombe mentions that the question of public baths has been much discussed by the health committee and the Ministry. In the older parts of the town not only cottages, but many of the better-class houses have no bathroom. The need is for a simple type of building for the use of the occupants of the bathless houses. There are already swimming baths owned by a private firm. Margate is still faced with a deplorable shortage of houses. The council erected 84 houses in 1921, 52 in 1922, 22 in 1923, and none in 1924. A further 48 houses were, however, begun in 1924. Owing to the growth of the town it has been found necessary to devise means for dealing with the increased sewage and storm water. The scheme, which has received the approval of the Ministry, includes deep-level sewers, large main sewers, pumping stations, pumping engines, and storm overflow drains. Margate came out well in the matter of hours of sunshine in 1924 with 1827·2 hours, as compared with 1725·3 in 1923.

SCHOOL MEDICAL SERVICE.

Name of district.	No. on roll.	Av. elem. school attendance.	No. of routine children examined.	No. of special examinations and re-inspections.	Percentage of children found on routine examination requiring treatment.‖
Warwickshire ..	37,800	—*	11,034†	6,123	12·94‡
Holland C.C. ..	11,064	—*	4,010	1,180	20·0
Bedfordshire ..	—*	—*	5,130	1,591	19·59

* Not given. † Secondary schools, 1346.
‡ Secondary schools, 17·6 per cent.
‖ Excluding dental defects and uncleanliness.

Warwickshire.

The concise and numbered paragraphs in which the report on the school work is presented by Dr. A. Hamilton Wood makes for brevity and easy reference, but leaves the reader wishing that observations had been made on points of interest arising in the course of the work. No special inquiries or investigations have apparently been undertaken. The satisfactory method of employing the health visitors as school nurses is in force—satisfactory in that it helps to coördinate the various health services, prevents overlapping, and is a strong link in the chain of preventive medicine between the parents and the medical services generally. A full tabular statement is appended of the work individually carried out by the school nurses.

The percentage of defects in the secondary schools is greater than that found in the elementary schools, but this is more apparent than real, and is largely due to the inclusion of dental defects in the return for secondary schools. As has been found elsewhere, treatment is more difficult to obtain so far as tonsils and adenoids are concerned, as only 22 per cent. of secondary scholars obtained treatment as against 55·9 per cent. of elementary children. No school meals have been provided as "there has been less unemployment in the industrial areas as compared with two years ago." No mention is made of open-air classes or schools, though even in rural districts such classes have their advantages, and some such provision would seem to be indicated for the 30 cases of malnutrition referred for treatment, of whom only eight appear to have been treated at the clinic. We trust the education committee will see the necessity of making suitable provision for the treatment of crippling defects. Dr. Wood reports on the requirements of such a scheme which would deal with over 200 children known to be so suffering.

Apparently the committee are now considering the question of providing suitable educational facilities for the 164 feeble-minded children, of whom 100 are at present in elementary schools and 64 are only suitable for special school treatment, and we hope with Dr. Wood that such provision will speedily materialise.

Holland County Council (Lincoln).

Dr. H. C. Jennings's report has been compiled with great care and has many points of general as well as technical interest. We note that the school nurses are also health visitors and tuberculosis nurses and give only two-fifths of their time to the school medical service. Comment is made on the school sanitation, and attention is drawn to the following points: (*a*) the discontinuance of the use of antiquated types of desks; (*b*) the abolition of all privy vaults; and (*c*) the provision of sufficient playground space, such space to have a hard, smooth, and impervious surface. It seems appalling in these days to think of children using a road as their playground, especially as the speed of motor-cars and their numbers are rapidly increasing.

At present there is no provision for the treatment of dental defects, and it is to be hoped that the scheme laid out in the report will be speedily adopted. There are comprehensive details on the cost of dental treatment. As the cost would entail 1/4th + 1/10th of a penny charge on the rates, and this includes the provision of a mobile dental outfit, one wonders why it has not been in being long ere this. Dr. Jennings's notes on diet of school-children are of interest, and he urges that elementary dietetics should find a place in the school curriculum. We might also add propaganda amongst parents. No facilities exist for the provision of school meals and there are no open-air, physically defective, nor mentally defective schools in the area.

There were a great number of school closures, and in view of the memorandum on "Closure of and Exclusion from School" issued by the Ministry of Health and the Board of Education, 1925, they would appear to be excessive, notwithstanding that this is a rural area.

Bedfordshire.

The percentage of defects found is close to the average for the whole country. The proportion of parents present at routine examinations was high—65·7 per cent. Dr. R. T. Herdman comments on the great value of this factor, "For five minutes talk with a mother about the health of her child has a far greater effect than any number of letters advising her what should be done," although it takes longer to examine a child when one has at the same time to point out to the parent any defect found and explain its effect on the health of the child. In this connexion it should be noted that the whole of the medical inspection is carried out by the school medical officer himself, so that the scope of his activities is more limited than he would no doubt desire.

The arrangements for treatment are not detailed, but the percentage of all defects treated, excluding verminous conditions, is good—72·21 per cent. Spectacles were supplied in 71 per cent., though it is remarked that in agricultural occupations glasses are not always felt to be as essential as in urban employment. There are a considerable number of children suitable for special education—viz., 103 mental defectives and 31 physical defectives—still in elementary schools or receiving no education at all, and though in these scattered rural areas special provision is manifestly difficult, yet we would hope that something more may be done in the near future. The dental work is evidently carried out under some difficulties which would be greatly lessened by the establishment of central clinics.

Reading between the lines of the whole report, we get the impression of a task carried out with scarcely adequate facilities in a very human and sympathetic spirit.

INFECTIOUS DISEASE IN ENGLAND AND WALES DURING THE WEEK ENDED JUNE 6TH, 1925.

Notifications.—The following cases of infectious disease were notified during the week, namely:—Small-pox, 99; scarlet fever, 1293; diphtheria, 678; enteric fever, 51; pneumonia, 695; puerperal fever, 37; cerebro-spinal fever, 6; acute poliomyelitis, 5; acute polio-encephalitis, 1; encephalitis lethargica, 66; dysentery, 5; ophthalmia neonatorum, 105. There were no cases of cholera, plague, or typhus fever notified during the week. The number of small-pox cases showed an increase of 11 over the number for the preceding week.

Deaths.—In the aggregate of great towns, including London, there was 1 death from enteric fever, 62 from measles, 16 from scarlet fever, 62 from whooping-cough, 32 from diphtheria, and 42 from influenza. In London itself the deaths from influenza numbered 7, from whooping-cough 9, and from diphtheria 10.

WORKSOP VICTORIA HOSPITAL.—A new wing of this hospital, which is part of the war memorial scheme, was opened by Sir John Robinson on May 30th. The extension cost £15,000.

THE OSLER MEMORIAL AT OXFORD.

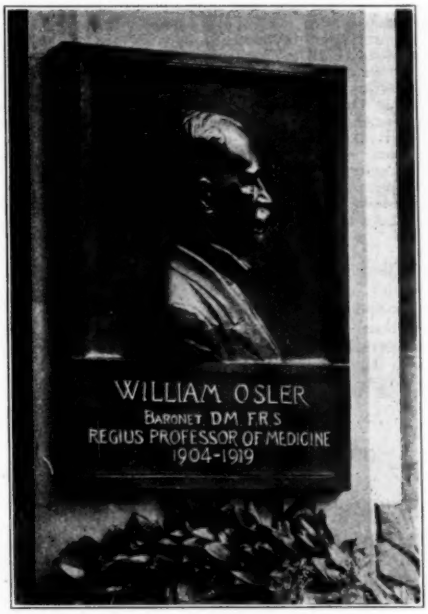
A BRONZE plaque in memory of Sir William Osler, late Regius Professor of Medicine, was accepted on behalf of the University and unveiled by the Vice-Chancellor, Mr. Joseph Wells, Warden of Wadham, on June 10th, in the Court of the University Museum, in the presence of a large and representative gathering. Among those present were Lady Osler; Sir Charles Sherrington, President of the Royal Society; Sir Archibald Garrod, Regius Professor of Medicine in the University of Oxford; Sir Humphry Rolleston, President of the Royal College of Physicians, and Regius Professor of Physic in the University of Cambridge; Dr. J. G. Adami, Vice-Chancellor of the University of Liverpool (representing McGill University); General Sir William Leishman, Director-General, Army Medical Service; the Master of University, the President of Corpus and Mrs. Allen, the President of Magdalen and Lady Warren, the Dean of Christchurch, Dr. Ainley Walker, Dean of the Medical Faculty, Prof. E. B. Poulton, and Prof. Arthur Thomson. The plaque, which has been affixed in the University Museum by permission of the delegates, is the work of Mons. F. Vernon, a French sculptor, and is a replica of that made for the Faculty of Medicine of Maryland, U.S.A. It was presented to the University on behalf of the subscribers to the Sir William Osler Memorial Fund by the President of Magdalen.

Sir Herbert Warren spoke in terms of much warmth and feeling of the services of Sir William Osler to Oxford and to medicine, and of the charm and inspiration of his personality. He referred briefly to the remarkable growth and development of the School of Medicine and its scientific departments, since the time when Sir Henry Acland set to work to devote himself to the restoration of an almost derelict school. By their genius and enthusiasm he, and his successor, Sir John Burdon-Sanderson, infused new life into the school and launched it on the fresh career of usefulness to which the late Regius professor so largely contributed.

The Vice-Chancellor, in unveiling the beautiful plaque, said it was a very great personal pleasure and honour to him to accept the memorial on behalf of the University. There were many who knew Sir William Osler as a name of authority in medicine; but here he was remembered even more for his never-failing kindness, his sympathy, his love of children, and his magnetic personality. He was not only a great man, but a most lovable one. It was very fitting that his memorial should stand in a place connected with so many great men of Oxford, and especially of Christ Church, his own college.

A wreath of laurel and white heather was then placed at the foot of the memorial by Mr. J. F. Fulton, Magdalen and Harvard, on behalf of the Inter-State Post-Graduate Assembly of American Physicians and Surgeons.

Sir Humphry Rolleston paid an eloquent tribute to Sir William Osler's life and work which adorned so many departments of learning: "Osler's services to medicine, like the man himself," said Sir Humphry Rolleston, "were remarkable for their infinite variety; his activities were not mainly confined, as have been those of some heroes of our profession, to one field, such as laboratory research, clinical observation, teaching, or education; he played a prominent part in all these spheres. Osler first made his mark as a microscopist—in an investigation of the Canadian Diatomaceæ, then of the blood platelets, and somewhat later of the malarial parasite; and as a morbid anatomist at McGill, Montreal, he laid the firm foundations of that sense of proportion so essential for a physician. As a clinician he established new syndromes, such as erythræmia (Vaquez-Osler disease), hereditary telangiectases, splenic anæmia, and pointed out certain symptoms or signs in recognised diseases, so that 'Osler's nodes' in subacute bacterial endocarditis are familiar. The most modern methods of the laboratory were fully utilised to supplement the routine and thorough examination of the patient, the new and the old being skilfully blended so as to obtain the best of both. Like Trousseau, he ranged widely over the whole field of medicine and enriched it both by observation and by deductions based on collected statistics; his literary output in 49 years amounted to more than 770 books, papers, and addresses." Sir Humphry Rolleston dwelt on Osler's inspiring influence, owing to his perpetual youth in mind and wide sympathy and knowledge of young men, teaching them not medicine only, but humanity and the way of life. "Ever active in the wards," the speaker continued, "Osler's influence stimulated others to individual observation and research and so



to advance the science and art of healing. His writings, especially his great text-book, remarkable alike for its conciseness, completeness, and atmosphere of personal experience, brought him numberless followers whom he had never met. A happy manner of persuasive enthusiasm admirably fitted him as a great leader in campaigns for the prevention of diseases, such as enteric fever, malaria, tuberculosis, and venereal infection, and he not only originated, but carried through successfully schemes for the benefit of the nations. His most remarkable success, however, was as an educator of the medical profession; this was largely due to his personality and to the way he put into effect his motto 'Write me as one that loves his fellow men.' A great believer in the educational and harmonising influence of medical societies and in united effort, he was the moving spirit in starting the Association of Physicians of Great Britain and Ireland, and for its first 12 years the senior editor of its official organ."

Sir Archibald Garrod proposed a vote of thanks to the Vice-Chancellor for presiding on the occasion, and referred to the position happily chosen for the memorial in close proximity to the statue of Sydenham and near the figures of Harvey, Hunter, Acland, and Burdon-Sanderson.

THE OSLER MEMORIAL FUND.

By a recent Decree in Convocation the University of Oxford has gratefully accepted the Fund subscribed in memory of the late Regius Professor of Medicine, and has made the following regulations for its administration.

1. The Fund shall be called "The Osler Memorial Fund."
2. A Bronze Medal shall be awarded once in every five years to the Oxford medical graduate who shall, in the opinion of the Board of Awarders hereinafter constituted, have made the most valuable contribution to the science, art, or literature of medicine, and who has not previously received the medal.
3. For the purpose of the preceding clause the term "Oxford Medical Graduate" shall mean a person, whether man or woman, who has taken the degrees of Bachelor of Arts and Bachelor of Medicine at the University of Oxford.
4. The Board of Awarders shall be constituted as follows: The Vice-Chancellor; two professors of the Faculty of Medicine elected by the Board of the Faculty of Medicine; two persons not being members of the University elected by the Hebdomadal Council on the recommendation of the Board of the Faculty of Medicine. The elected members of the Board of Awarders shall hold office for five years and be re-eligible.
5. All expenses in connexion with the award of the Bronze Medal shall be paid out of the income of the Fund.
6. The residue of the income of the Fund may be used at the discretion of the members of the Board of Awarders resident in Oxford in making grants from time to time to teachers in the Oxford Medical School, recognised as such by the Board of the Faculty of Medicine, to enable them to pursue some special study connected with medicine outside the University.
7. Applications for such grants shall be made to the Dean of the School of Medicine, who shall act as secretary to the Board of Awarders.

Osler Memorial Medal.

The first quinquennial award of the medal was made on June 12th to Sir Archibald E. Garrod. The Board of Awarders consisted of the Vice-Chancellor (the Warden of Wadham), Sir Charles Sherrington, Sir Humphry D. Rolleston, and Sir William B. Leishman.

SCOTLAND.

(FROM OUR OWN CORRESPONDENTS.)

University of Glasgow; New Lectureships in Pathological Biochemistry.

THE University, the Royal and the Western Infirmaries of Glasgow have recently received considerable benefactions for the purpose of promoting the advancement of medical knowledge by biochemical and other scientific methods. At each infirmary suitable laboratories are being provided and equipped, and the University has agreed to coöperate by providing at each a university lecturer in pathological chemistry, who shall also be appointed, by the infirmary, its clinical biochemist. The stipend of the joint post, which is a whole-time one, will be £700 a year. The duties include the practical instruction of students and practitioners in biochemical methods, the advancement of medical knowledge by scientific investigation, and the assistance of the clinical staff by making chemical examinations and tests in relation to their patients. It is expected that the first appointments to the new posts will be made during the summer.

A Nursing Home for Civil Servants.

The Civil Service Scottish Advisory Committee is forming the East of Scotland Civil Service Nursing Association, Limited, to provide medical and surgical institutional treatment for Government servants and their dependants. A fully-equipped nursing home, with accommodation for 12 patients, has been acquired in the centre of Edinburgh. Men will pay an annual subscription of 12s. and women of 8s., with a small entrance fee. Patients will pay an inclusive rate of £3 3s. per week.

The British Medical Association in Scotland.

The Scottish office of the British Medical Association is only five years old, but so rapidly has the Association grown north of the Tweed that a new central office has been found necessary, and on June 4th the Scottish House, at 6, Drumsheugh-gardens, Edinburgh, was opened by Sir John Gilmour, Secretary for Scotland. The proceedings took the form of a luncheon at which Dr. C. E. Douglas, Chairman of the Scottish Committee, presided. Sir John Gilmour, who proposed the toast of the British Medical Association, after referring to the widespread activities of the Association in the United Kingdom, said that they must also be made Empire-wide. As the years progressed it was found that medical problems at home were influenced by repercussions from other parts of the King's dominions. Naturally there were certain differences between the work of those across the Border and their Scottish confrères, and mutual efforts for understanding, wisely used, would be of great benefit to all. It was a high pleasure, he said, as President of the Board of Health in Scotland, to be associated with such efforts, and he believed the relationship between the Association and other medical bodies and the Board of Health in Scotland had been not only of a friendly but essentially of a useful nature. In his reply, Dr. R. A. Bolam, Chairman of the Council of the British Medical Association, expressed his pleasure that the Imperial bearing of the Association was recognised in high quarters, and Dr. Douglas, in assuming custody of the House, remarked that although in some respects it was necessary for the medical profession to behave through the Association as a trades-union—that was to say, they had to defend the interests of the profession—there had not been a single action of the Association that had been contrary to the public interests. Other toasts included The City of Edinburgh, proposed by Dr. R. C. Buist, Dundee, and replied to by Lord Provost Sir William Sleigh; Floreat res Medica, by Sir Robert Philip; and The Chairman, by Dr. H. B. Brackenbury. Among those present were many representatives of medical and associated bodies, including Lord MacKenzie, Mr. N. Bishop Harman, Dr. A. Cox, Mr. L. Ferris-Scott, Dr. James R. Drever, Prof. G. Lovell Gulland, Prof. T. K. Monro, Prof. Lorrain Smith, Prof. Currie, Sir David Wallace, Prof. B. P. Watson, Sir Robert Philip, Prof. G. M. Robertson, Dr. A. K. Chalmers, the President of the Royal Medical Society, Edinburgh, Mr. W. J. Dobie (solicitor to the Association in Scotland), and Mr. Rutherford Hill (secretary, Pharmaceutical Standing Committee).

Crippled Scottish Children.

A fund is being raised in Edinburgh to provide the preliminary expenses of a clinic at which massage and remedial gymnastics will be available at a low cost for the poorer class of patient. At present there is in Scotland no adequate organisation for dealing with crippled children.

The recent "Day of Remembrance" for Edinburgh Royal Infirmary produced over £6000. The collecting boxes contained 240 bright new farthings and a number of Russian roubles.

Obituary.

SAMUEL TAYLOR DARLING.

Dr. S. T. Darling, of the United States of America, member of the League of Nations Malaria Committee, whose sad death as the result of a motor accident near Beirut, Syria, we announced recently,[1] was a pathologist of unusual distinction.

He was born in Harrison, New Jersey, in 1872. He received his degree in medicine at the College of Physicians and Surgeons, Baltimore, in 1903. From 1906 to 1915 he held the post of chief of laboratories of the Isthmian Canal Commission, Panama Canal Zone. His research studies in tropical medicine during this period won him wide recognition among the medical profession. In 1913–14 he accompanied General Gorgas on a sanitary mission to the Rand Mines and Rhodesia, South Africa. In 1915 he joined the staff of the International Health Board, and for the next three years he headed a medical commission

[1] THE LANCET, May 30th, p. 1159.

engaged in investigating the causes of anæmia among the people of Malaya, Java, and Fiji. From 1918 to 1920 he served as professor of hygiene and director of laboratories of hygiene in the Medical School of Sao Paulo, Brazil. Since that time he had been director of a field laboratory for research studies in malaria located at Leesburg, Georgia. He was recently appointed corresponding member of the Malaria Commission of the League of Nations. At the time of his death he was travelling with the Commission which was investigating the prevalence of malaria in Palestine and Syria.

Dr. Darling was an honorary Fellow of the Royal Society of Tropical Medicine and Hygiene, London, he and General Gorgas being the only Americans so honoured. He had accepted an invitation to deliver the annual address to the society next month. He was also a Fellow of the American Medical Association and a corresponding member of the following organisations: Helminthological Society, Washington, D.C., the Malaria Commission of the Health Section of the League of Nations, Société de Pathologie Exotique de France, and Sociedade de Medicine e Cirurgia de Sao Paulo, Brazil. He was president of the American Society of Tropical Medicine for the year 1924–25. His published works include important contributions to our scientific knowledge of malaria, relapsing fever, dysentery, and parasitic diseases, particularly hookworm disease, filariasis, and trypanosomiasis.

THE BATEMAN APPEAL.

As already explained in THE LANCET, it has been felt that material assistance ought to be offered to Dr. Bateman to meet the legal expenses of his successful appeal and to make good the deficiency in his professional income. Accordingly the Bateman Fund has been opened and lists of contributions have appeared in recent issues. We have received additional contributions as follows:—

	£	s.	d.
Already received and acknowledged ..	473	13	6
Dr. A. F. Hurst	5	5	0
Dr. F. A. Coward	1	1	0
Dr. A. Rose	1	1	0
Dr. J. W. Carr	1	0	0
Anon.	0	10	6
Dr. J. A. Beals	0	5	0
	£482	16	0

Remittances should be forwarded to the Manager of THE LANCET, 423, Strand, W.C. 2, and made payable to the "Bateman Fund Account."

RUTHERFORD MORISON TESTIMONIAL.

THE following is the third and final list of subscriptions to this Fund, the grand total of which, including subscriptions promised, amounts to £1528:—

Third Subscription List.

£52 10s.—Prof. C. Saint (Newlands, C.P.).

£15 15s.—Dr. Mary S. Gordon (Johannesburg).

£10 10s.—Prof. R. P. Ranken Lyle (Newcastle), Dr. W. Frank Wilson (Newcastle), Mr. F. C. Pybus (Newcastle), Mr. T. A. Hindmarsh (Newcastle), Mr. J. Collingwood Stewart (Newcastle).

£5 5s.—Dr. J. S. Arkle (Newcastle), Dr. O. W. Ogden (Newcastle), Dr. G. A. Atkinson (Newcastle), Dr. P. R. Ingram (Muswell Hill), Mr. A. Hedley Whyte (Newcastle), Dr. D. A. Dewar (Stanley), Mr. C. W. MacGillivray (Edinburgh), Dr. E. Craig Dunlop (Carlisle), Mr. J. W. Leech (Newcastle), Mr. F. J. Nattrass (Newcastle), Prof. R. Howden (Newcastle), Dr. McAleenan (Blaydon), Dr. A. Parkin (Newcastle), Dr. R. Dagger (Newcastle), Dr. Mary E. Howie (Newcastle), Dr. George Hall (Newcastle), Dr. C. G. Irwin (Tynemouth), Dr. R. W. Nevin (Newcastle), Dr. D. Wells Patterson (Newcastle), Mr. J. D. Wardale (Newcastle).

£5.—Mr. Harvey Evers (Newcastle), Dr. R. Wilkie Smith (Whickham).

£4 4s.—Dr. A. R. S. Jack (West Hartlepool), Dr. F. F. T. Hare (Durham).

£3 3s.—Dr. Ritson (Hexham), Dr. W. J. Phillips (Forest Hall), Mr. J. Brumwell (Newcastle), Mr. W. E. M. Wardill (Newcastle), Dr. J. M. Gover (Gosforth), Dr. Norris (Gateshead), Dr. J. C. Grant (West Boldon), Dr. G. E. Stephenson (Newcastle), Dr. E. E. Chapman (Hartlepool), Dr. I. G. Modlin (Sunderland).

£2 2s.—Dr. Hedda Alstron (Chipperfield), Dr. A. C. Jap (Singapore), Dr. W. Herbertson (Newcastle), Dr. J. Donaldson (Selukwe, S. Rhodesia), Dr. H. D. MacPhail (Newcastle), Dr. H. C. Coxon (Leamington), Dr. W. Kerr Russell (Newcastle), Mr. H. Frankling (Harrogate), Dr. G. E. Lloyd (Hexham), Dr. T. N. V. Potts (Newcastle), Dr. C. C. Robertson (Darlington), Dr. C. G. R. Goodwin (Barrasford), Dr. P. Holgate (North Shields), Captain J. A. Charles (Stanley), Dr. A. Dryden (Newcastle), Dr. J. W. Gibson (Newcastle), Dr. W. Pattullo (Spennymoor), Dr. W. Hudson (Bedlington), Dr. Langenberg (Houghton-le-Spring), Dr. A. Livingston (Newcastle).

£1 1s.—Dr. H. Widdas (Shildon), Dr. P. Vernon Anderson (Shildon), Dr. Janet A. Vaughan (Kachmir), Dr. O'Callaghan (South Shields), Dr. Hamilton (South Shields), Dr. P. A. Mackay (Newcastle), Dr. E. T. Colville (Newbiggin), Dr. L. F. Browne (London), Dr. R. B. Lishman (Felling), Dr. Whitley (Newcastle), Dr. M. Maclean (Ashington), Dr. H. S. Brown (Choppington), Dr. T. D. Silverston (Preston), Surgeon Commander G. O. M. Dickenson (London), Dr. L. H. Hunter (Middlesbrough), Dr. J. B. Alderson (Ryhope), Dr. H. V. Ingram (South Shields), Dr. William C. Haswell (Strensall), Dr. A. P. Lloyd (Penshaw), Dr. Herbert Christal (Hoxne), Dr. Mary Douglas (Newcastle), Dr. R. Ford Tredre (St. Blazey), Dr. Bendle (London), Dr. G. Howell (Newcastle), Dr. James Smith (Newcastle), Dr. A. B. MacPherson (Sunderland), Dr. Helen C. Buckell (Shipley), Dr. Milbanke (Sunderland), Dr. D. McArthur (Bury St. Edmunds), Dr. T. R. Pearson (Torquay), Dr. Miller (Bellingham), Dr. Ian Macdonald (Huelva, Spain), Dr. R. A. Welsh (Felton), Dr. F. H. Kennedy (Pershore), Dr. G. A. Mason (Sunderland), Dr. Catherine M. Jones (Swansea), Dr. N. A. Eddlestone (Whitley Bay), Dr. H. R. Smith (Newcastle), Dr. H. R. Smith (Newcastle) (second donation), Dr. Dickson (Hexham), Dr. C. J. Neilan (Seaham), Dr. W. T. Hall (Heaton), Dr. K. B. Allen (Bathurst, West Africa), Dr. W. Smith (Gateshead), Dr. A. T. Harrison, jun. (Sherburn), Dr. H. C. Rollin (Durham), Dr. T. L. Crawhall (Durham), Dr. S. K. Young (Chester-le-Street), Dr. Carina A. B. Lewis (Thames, N.Z.).

£1.—Dr. S. A. Shehid (Minia, Egypt), Dr. H. McAllum (Inglewood, N.Z.), Dr. W. C. Wardle (Middlesbrough).

10s. 6d.—Dr. W. H. Davis (Low Fell), Dr. Revie (Ashington).

10s.—Dr. Williams (Haltwhistle), Dr. E. F. Dawson Walker (Durham).

Subscriptions Promised, but Amounts Not Specified.—Dr. Sally Allen (Newcastle), Dr. S. K. Norris (New Brancepeth), Drs. J. and G. Denholm (Meadowfield).

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg. Comdr. E. S. Wilkinson and Surg. Comdr. W. Bastian are placed on Ret. List with the rank of Surg. Capt.

E. O'Reilly and J. Cussen to be Surg. Lts.

ROYAL NAVAL VOLUNTEER RESERVE.

Surg. Lt. H. O. Martin to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

REGULAR ARMY RESERVE OF OFFICERS

Lt.-Col. E. P. Hewitt having attained the age limit of liability to recall ceases to belong to the Res. of Off.

TERRITORIAL ARMY.

Maj. A. P. Watson to be Lt.-Col., and to command the 11th (2nd Scottish) General Hospital, vice Lt.-Col. (Bt.-Col.) D. J. Graham, vacated on completion of tenure.

D. L. Greig to be Lt.

To be temp. Lts. whilst employed as Dental Surgs.: Lts. A. P. McClare (and relinquishes the rank of Lt.) and A. Hughes.

ROYAL AIR FORCE.

P. D. Barling is granted a short service commission for three years on the active list as a Flying Officer.

INDIA AND THE INDIAN MEDICAL SERVICE.

Bhagwant Kishore Sikand, Des Raj Kajuria, and Arukkattur Rangaswamy Srinivasan to be Temp. Lts.

Capt. S. N. Hayes has handed over charge of the duties of superintendent of the District Jail at Dera Ghazi Khan. Maj. J. F. James, civil surgeon, Naga Hills, officiates as Civil Surgeon, Darrang, vice Lt.-Col. W. D. Richie, placed on special duty; Capt. C. H. P. Allan has been posted as Supernumerary Civil Surgeon, Cachar; Lt. E. F. Hottinger, civil surgeon, has been transferred to Mianwali; Lt.-Col. G. Hutcheson, officiating Inspector-General of Civil Hospitals, United Provinces, has been nominated to be President of the Indian Provinces Medical Council, vice Col. A. W. R. Cochrane, resigned; Maj. A. S. Leslie, on relief from appointment of district medical officer, South Canara, has been posted to the Government General Hospital, Madras; Maj. R. G. G. Croly acts as First Surgeon, General Hospital, and Professor of Surgery, Medical College, Madras, vice Lt.-Col. E. W. C. Bradfield.

Correspondence.

"Audi alteram partem."

PERIODICITY OF CHOLERA.

To the Editor of THE LANCET.

SIR,—In his interesting note in your issue of June 13th Major A. J. H. Russell states that he has discovered a regular "six-year cycle" of epidemic cholera prevalence in Madras and other parts of India, and as far as he can discover "no such periodic trend has been previously demonstrated in connexion with this disease." He may therefore be interested in looking up in the index of my work on "Bowel Diseases in the Tropics" the heading Cycles of Cholera Years, where he will find a brief discussion on a "Three-year Cholera Cycle" described by H. W. Bellew in his work of 1885 on the "History of Cholera in India," as well as a reference to the interesting study of the Epidemiology of Cholera in Southern India, by A. Herbert in the *Indian Medical Gazette* of 1894. It is, of course, well known that various communicable diseases tend to become epidemic at intervals of several years, including cholera and small-pox—the latter having been described by J. A. Laing in the Madras Sanitary Report of 1891 to recur at intervals of seven years in that province—although, if a sufficiently long series of years is examined, they are not very regular as far as my own studies of cholera in India are concerned.

It so happens that I have spent much time recently in a study of the epidemiology of cholera in India over a larger series of years than Major Russell refers to in his note, and have come to the conclusion, which I hope to be able to formulate before long, that the major cholera epidemics which originate in Bengal and spread at irregular intervals over large parts of India causing hundreds of thousands of deaths in a single year, *can* be foreseen in time to allow sanitary measures to be taken to control to some extent the dissemination of the disease by pilgrimages and fairs; although I find the conditions giving rise to cholera epidemics are not quite so simple as any "three-year" or "six-year" cycles, whichever period may ultimately prove to approximate the more nearly to the facts.

I am, Sir, yours faithfully,

London, June 14th, 1925. LEONARD ROGERS.

THE ALLEVIATION OF CHRONIC PROGRESSIVE DEAFNESS.

To the Editor of THE LANCET.

SIR,—I agree with Mr. G. C. Cathcart that in the electrophonoide method of Zund-Burguet we have a useful means of alleviating certain cases of deafness which have failed under other methods. I have been using an electrophonoide for two years, and though my results have not been quite so satisfactory as Mr. Cathcart's, I have found it well worth the time and patience required in its use.

I have found no response in cases of syphilis, the various arsenical preparations used in treatment seem to have a destructive effect on the nerves, and this holds good also in cases of malaria where quinine has been given. The method has been disappointing in cases with tinnitus of long standing, but in two cases with Ménière's symptoms the results were gratifying. These patients were both women who had become chronic invalids, the vertigo, tinnitus, and sickness being so severe for weeks together as to keep the patients continually in bed, and these symptoms continued even when the patients were in a recumbent position. One patient has had no attacks for a year, and the other has greatly improved in every way, and has not had an attack for four months. Both are now able to take ordinary exercise.

I am, Sir, yours faithfully,

ANTHONY MCCALL, M.D.

Bournemouth, June 15th, 1925.

THE BABINSKI RESPONSE IN ECLAMPSIA.

To the Editor of THE LANCET.

SIR,—In the article by Prof. T. R. Elliott and Dr. F. M. R. Walshe in THE LANCET of Jan. 10th (p. 65) it was stated that eclampsia did not lead to an extensor response. In the first instance in which the Babinski symptom was observed the illness was complicated with lethargic encephalitis. In another case the association with status epilepticus seemed to be responsible for the appearance of the extensor type. In the obstetrical text-books its behaviour is not mentioned. According to the authors, it may be expected in eclampsia, because the latter is a toxic state often associated with serious destruction of the liver.

In this connexion some observations which I published in the *Neurologisches Centralblatt* (1913, No. 17) may be of interest. In a case of eclampsia with extensor response histological examination revealed the presence in several capillaries of large square cells, which remained hanging like emboli. The nuclei of these cells showed partly pyknosis, partly karyorrhexis. Some were in a state of mitosis, so that several equatorial plates were visible. Slight lymphocytosis was present, and in the liver some cellular dissociation. In this case, then, emboli in the cerebral capillaries were formed by fœtal cells identical with the syncytium cells which wander into the maternal venous cavities. These emboli are, it is true, not essentially specific for eclampsia, because they sometimes occur in normal pregnancy, but when they are present in great numbers in eclampsia with extensor response, we can hardly help supposing that they may play a rôle in the manifestation of Babinski symptom, perhaps in association with the toxic state.—I am, Sir, yours faithfully,

LADISLAUS BENEDEK,
Director of the Neurological Clinic,
June 12th, 1925. Debrecen, Hungary.

Medical News.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—At a recent meeting of the Council of the College the President, Sir John Bland-Sutton, in the chair, Mr. Graham Simpson, surgeon to the Royal Hospital, Sheffield, and lecturer in surgery at the University of Sheffield, was elected a member of the Court of Examiners in Surgery. Mr. Cecil Pembrey Grey Wakeley was elected a member of the Board of Examiners in Anatomy for the Fellowship for the ensuing year. Mr. John Basil Hume was elected a member of the Board of Examiners in Anatomy under the Conjoint Board. Dr. William Porter MacArthur was appointed an examiner in Bacteriology and Dr. P. H. Manson-Bahr was appointed an examiner in Diseases and Hygiene of the Tropics for the Diploma in Tropical Medicine and Hygiene. Mr. C. B. Goulden was elected a member of the Board of Examiners in Ophthalmic Medicine and Surgery. Dr. F. L. Golla was appointed an examiner in Psychological Medicine. Mr. E. B. Dowsett and Mr. A. T. Pitts were appointed additional members of the Board of Examiners in Dental Surgery.

The following gentlemen were elected professors and lecturers for the ensuing year:—

Hunterian Professors.—Sir Arthur Keith: On the Evolution of the Higher Primates. Arthur Edmunds: On Pseudo-Hermaphrodism and Hypospadias and their Surgical Treatment. Joseph Ebenezer Adams: On the Surgery of the Jejunum. Edward Musgrave Woodman: On Malignant Disease of the Œsophagus. Arthur Tudor Edwards: On the Surgical Treatment of Phthisis and Bronchiectasis. Arthur Lawrence Abel: On the Treatment of Cancer of the Œsophagus. Hugh William Bell Cairns: On Neoplasms of the Testicle.

Arris and Gale Lecturers.—Stanford Cade: On Cholecystography. Alfred Piney: On the Importance of Hæmatology in Surgery.

Erasmus Wilson Lectureship.—Clement E. Shattock: Demonstrations on Pathology.

Arnott Demonstratorship.—Sir Arthur Keith: Demonstrations on the Contents of the Museum.

Diplomas of Fellow were conferred upon 24 candidates as the result of the recent examination, for which 101 candidates presented themselves. Of these candidates, 27 were successful and 74 were rejected. Three candidates have not yet complied with the by-laws and are therefore no

entitled to receive the diploma. The following are the names and medical schools of the successful candidates :—

Noel F. Adeney, Cambridge and St. Mary's; George Armitage, Leeds; Geoffrey M. F. Barnett, Otago and Middlesex; Arthur C. B. Biggs, Univ. Coll.; Cyril M. Brophy, Univ. Coll. and St. Bart.'s; John D. M. Cardell, St. Thomas's; Guy O. Chambers, St. Bart.'s; Harry K. Christie, Otago and Guy's; Cecil C. Coghlan, Sydney, Dublin, and Guy's; William M. Cotter, Otago and St. Bart.'s; Milton Geaney, Sydney and Guy's; Frank Hudson, Univ. Coll.; John A. James, Sydney and Guy's; Basil L. Laver, Guy's; Vaman R. Miraljkar, Bombay and St. Bart.'s; John R. Nicholson-Lailey, Bristol and London; James B. Oldham, Liverpool; Cyril M. Pearce, St. Bart.'s; Kenneth N. Purkis, Guy's; Mohammed M. Riad, Cairo and St. Bart.'s; Andrew Rugg-Gunn, Edinburgh and St. Mary's; Ronald C. Shaw, Manchester; Maurice P. Susman, Sydney, Middlesex, and St. Bart.'s; and Charles A. Wells, Liverpool.

The diploma of Fellow was also conferred upon Max A. Lautré, St. Thomas's, who has previously passed the examination and has now attained the age of 25 years.

Diplomas of Member were conferred upon Eileen S. Morris, Univ. Coll., and Marie Pedersen, Royal Free, who have now complied with the necessary by-laws.

INTER-STATE POST-GRADUATE ASSEMBLY OF AMERICA.—At the conclusion of the London programme on June 6th the members of this Assembly proceeded on a three days' visit to the Midlands from Monday, June 8th, to Wednesday, the 10th. It is stated that owing to the number of visitors who wished to inspect Leeds, over 600 out of the 700 delegates, a ballot was held in London previously, whereby the party was divided into three, each section visiting respectively Liverpool, Manchester, and Leeds.

Liverpool.—All the hospitals of the city were united in providing an extensive and varied programme. The general principle was that the mornings should be devoted to visits to the hospitals, operations, demonstrations, and clinical lectures being provided daily from 9 A.M. till 12.30. The Liverpool Medical Institution was used as a central bureau, where tickets and information were distributed each morning at 8.30. Much appreciation was expressed of the adequacy of the arrangements and of the excellence of the clinical material provided. In a special degree the surgery of Liverpool aroused the approval of the visitors. On Monday afternoon a united meeting was held at the Medical Institution. From 2 to 4 there was a series of short papers on subjects of varied interest. Prof. Ernest Glynn spoke on Tumours of the Suprarenal Cortex and their relation to Virilism, Prof. John Hay on High Blood Pressure, Dr. Dingwall Fordyce on the Hygiene of the Cripple Child, and Dr. R. J. Minnitt on Insulin in the Treatment of Post-anæsthetic Complications. The papers elicited well-informed criticism. After a brief interval for tea a series of instructive cases was shown, illustrating the surgery of children, orthopædic work, skin diseases, and other conditions of special interest. Dr. R. W. Mackenna demonstrated an excellent series of wax casts, gathered together in the course of his dermatological practice. Tuesday and Wednesday afternoons were given up to visits to outlying institutions, such as the Royal Liverpool Children's Hospital (Country Branch) at Heswall, the Liverpool Children's Open Air Hospital at Leasowe, and the City Sanatorium and Isolation Hospital at Fazakerley. At Heswall Sir Robert Jones and his colleagues on the staff drew an appreciative audience to their beautifully situated hospital overlooking the Dee, while at Leasowe Dr. T. H. Martin demonstrated the good results obtained in the treatment of surgical tuberculosis in children under the ægis of the Liverpool Child Welfare Association. At Fazakerley the visitors were welcomed by Sir John Ulling, M.D., and conducted round by Dr. C. Rundle, the medical superintendent, and Mr. John T. Morrison, the consulting surgeon. Perhaps the greatest interest was aroused in the arc light department, and the results of treatment in the cases seen there. An account of the visit would be very incomplete which contained no allusion to the civic reception given by the Lord Mayor on Tuesday evening at the Town Hall. A distinguished gathering was addressed by the Lord Mayor and by Dr. Charles Mayo. The note of welcome was warmly responded to and feelings of appreciation generously expressed, not only of the scientific and medical work seen, but also of the Englishman's fine qualities of character and personality, above all his sense of the value of the things best worth having. On Monday the "staffs of the Liverpool hospitals" were "At Home" in the Walker Art Gallery, where many Americans found friends, whilst all enjoyed the fine collection of pictures.

Manchester.—The party visiting Manchester necessarily split itself up into sections, attending lectures and demonstrations in the matters most interesting to each. On the three mornings visits were arranged to local hospitals, including the Royal Infirmary, Salford Royal Hospital, Ancoats Hospital, and Crossley Sanatorium. At the Royal Infirmary medical and surgical cases were shown, and among others the X ray, aural, and electrocardiographic departments were inspected. On Monday afternoon a formal welcome was given by the Vice-Chancellor of the University, and between 2.30 and 5 a series of lectures was held at the University. These included the Diagnosis of Jacksonian Epilepsy by Mr. G. Jefferson; Success and Failure in Organo-therapy by Prof. G. R. Murray; Formation of Bone in Soft Parts by Prof. J. S. B. Stopford; and Infective Labyrinthitis: its Rôle in the Production of Otitic Meningitis and its Surgical Treatment, by Sir William Milligan. The various departments of the University were inspected and in the medical library an exhibition of rare medical books was on view. The non-medical members of the party inspected the docks and part of the Manchester Ship Canal on a tug placed at their disposal by the directors. On Tuesday a visit was paid to Rylands' Library, and a lunch was given at the Midland Hotel at the invitation of the Manchester Branch of the Anglo-American Society. In the afternoon the following series of lectures was given at the Royal Infirmary: Arterial Insufficiency, by Dr. J. C. Bramwell; the Experimental Study of Epidemics, by Prof. W. W. C. Topley; Gynæcology in Manchester, by Dr. A. Donald; Symptomless Hæmaturia, by Mr. A. H. Burgess; the Surgical Treatment of Arthritis Deformans, by Mr. H. Platt. A party was taken to view the Royal Exchange, by invitation of the chairman of the board of directors, and in the evening a civic reception was given to the delegates by the Lord Mayor and Corporation in the Town Hall. On Wednesday a party visited Richard Haworth and Company's cotton mill, and a lunch was given at the Midland Hotel on the invitation of the medical staffs of the Manchester hospitals.

Leeds.—A full programme was arranged in advance for the visitors, starting each day at the Medical School at 9 A.M., and at the various departments lectures and demonstrations were held until 6 P.M. The departments of anatomy, pathology, and surgery occupied the mornings; medicine, including neurology and children's diseases, the afternoons until 5 o'clock. The work of the eye and ear cliniques, X ray diagnosis, and X ray therapy were demonstrated between 5 and 6. On Monday the party was welcomed by Dr. J. K. Jamieson, Dean of the Faculty of Medicine of Liverpool University. Among the lectures and demonstrations Dr. J. Burrow spoke on Some Problems of Cardiac Disease, and Prof. W. H. M. Telling gave Some Remarks on Sigmoid Diverticulitis. Sir Berkeley Moynihan delivered an address on the subject of gall-stones. It was unfortunate that owing to the arrangements made by the organisation of the visitors themselves, they were late in arrival for the demonstrations every day except Wednesday, when those of the party stationed in the city attended the cliniques. On the other days a journey from Lancashire had to be made. The necessity of an early departure by train, and a late arrival in the mornings took the edge off the programme, and many of the demonstrations were badly attended. However, the experience gained and the hasty friendships made will enable the next meeting to be a greater success. The surgical cliniques in the middle of the morning attracted most attention. On Wednesday morning the Lord Mayor welcomed the members of the Association, and Dr. C. Mayo made a happy speech in reply.

On Wednesday evening the whole of the delegates sailed from Liverpool by special steamers for Ireland.

Dublin.—The Association visited Dublin in two parties, from Thursday, June 11th, to Monday, June 15th, inclusive. The first party spent the Thursday and Friday in Dublin and then changed places with a similar party which had gone first to Belfast. For the four days of their stay in Dublin the visitors were invited to spend what time they chose each morning in the several hospitals, where interesting cases were shown by surgeons and physicians, and where special series of operations were performed. This was probably the part of the programme which the visitors enjoyed most. In addition three special sessions for exhibition of cases were held in the Physics Theatre of University College, the authorities of which institution took special pains to provide for the comfort of their visitors. On Thursday morning, on their arrival, the Americans were welcomed at the Royal College of Physicians by the President, Sir William Thompson. In the afternoon a discussion was held at University College on exophthalmic goitre, Prof. F. O'Carroll presiding. The discussion was opened by Prof. T. G. Moorhead, who was followed by Dr. Charles Mayo and Drs. T. G. Hardman and H. F. Moore. On Friday morning, under the presidency of Sir James Craig, a discussion took place on encephalitis lethargica. The discussion was opened by Prof. F. C. Purser, and a series of some 20 cases exhibiting various sequelæ was shown. On Saturday morning, after the exhibition of some medical cases, a discussion on puerperal sepsis was opened by Dr. G. FitzGibbon, Master of the Rotunda Hospital, who was followed by Prof. J. W. Bigger and Prof. R. J. Rowlette. A pleasant interchange of honours took place between the American and Irish professions. At one of the early meetings

Dr. Charles Mayo announced the election of a number of honorary members of the Inter-State Post-Graduate Assembly. They were: Dr. D. J. Coffey, President of University College; Sir William Thompson, President of the Royal College of Physicians of Ireland; Mr. R. C. B. Maunsell, President of the Royal College of Surgeons in Ireland; Sir James Craig, President of the Royal Academy of Medicine in Ireland; Prof. J. F. O'Carroll, Sir Robert Woods, Sir William Taylor, Prof. F. C. Purser, Prof. T. G. Moorhead, Mr. A. Blayney, Dr. T. P. C. Kirkpatrick, Mr. A. A. McConnell. At a later stage the election of Mr. T. Healy, Governor-General, was announced.

On Friday afternoon, at the Royal College of Physicians, the Honorary Fellowship of the Royal Academy of Medicine was conferred on Dr. Charles Mayo, and in absentiâ on Dr. George Crile. The University of Dublin has passed graces for conferring honorary degrees on Dr. Mayo and Dr. Crile, and the ceremony will take place later in the month. The arrangements for social entertainments were thorough and comprehensive. On Thursday evening President Cosgrave and the Executive Council held a reception in the National Museum, at which a large number of guests had the opportunity of studying the unique collection of Irish antiquities, as well as many other objects of interest. On Saturday afternoon, in the beautiful grounds of the Viceregal Lodge, His Excellency the Governor-General gave an equally pleasant reception. Many of the American visitors took advantage on Sunday of their honorary membership of the several Dublin golf clubs, and enjoyed a game in beautiful surroundings. The visit ended on Monday with the departure of the last of the guests for Scotland.

Belfast.—A similarly varied and hospitable programme was provided here. The various hospitals and institutions of the city were visited, and addresses given, resulting in debates upon salient medical and surgical subjects. At Mount Stewart Lord and Lady Londonderry gave an afternoon garden reception, and at Queen's University Lord Londonderry, the Chancellor, conferred an Honorary LL.D. on Dr. Charles Mayo, Dr. H. Cabot, and Dr. Franklin Martin.

LONDON TEMPERANCE HOSPITAL.—Princess Arthur of Connaught last week opened additions which include the Vezey Strong Memorial Home, which will accommodate 33 sisters and nurses. An improved operating theatre, an X ray room, an anæsthetising room, a recovery room, a surgeons' room, and a sterilising room are among the additions. Students will watch operations from behind a glass screen. Every bedroom in the nurses' home is fitted with hot and cold water.

UNIVERSITY OF LEEDS.—Dr. W. H. Maxwell Telling, who has occupied the Chair of Therapeutics in the University of Leeds for the past two years, has been elected by the Council of the University Professor of Medicine and head of the Department of Medicine, as from Oct. 1st next, on the retirement from that office of Dr. T. Wardrop Griffith. —Dr. R. A. Veale has been elected to the Chair of Therapeutics in place of Prof. Maxwell Telling, and Dr. G. W. Watson has been elected to the Chair of Clinical Medicine, which has been vacant since the retirement of Dr. A. G. Barrs.

TABLET TO THE MEMORY OF DR. T. D. LISTER.—At the National Sanatorium, Benenden, Kent, on the occasion of a lunch given by the Council of the National Association for the Prevention of Tuberculosis to the delegates to the conference of the Post Office Sanatorium Society on May 30th, a memorial tablet was unveiled to Thomas David Lister, C.B.E., M.D., M.R.C.P. Dr. Lister, who was born in 1869 and died in 1924, had given devoted service to the anti-tuberculosis campaign and was one of the founders of the Benenden Sanatorium, the plans for which had been his special study. The tablet, which is placed in the entrance hall, was erected by the Council of the National Sanatorium Association.

TOUR TO THE HEALTH RESORTS OF FRANCE.—The nineteenth Voyage d'Etudes Médicales to the health resorts of France (which has been previously announced in these columns) will take place from Sept. 2nd-15th. The party will meet at Vittel at 5.30 P.M. on Sept. 2nd, and during the subsequent 13 days will visit the following places: Contrexéville, Martigny-les-Bains, Bourbonne-les-Bains, Bains-les-Bains, Plombières-les-Bains, Luxeuil-les-Bains, Bussang, Gerardmer, La Schlucht, Munster, Colmar, Soulzbach and Soulzmatt, le Linge, les Trois Epis, Aubure, Ribeauville, Chatenois, Barr, Sainte-Odile, Le Hohwald, Schirmeck, Strasbourg, Niederbronn, Morsbronn, Luxembourg, Mondorf, Thionville, Sierck-les-Bains, Spa, Nancy-Thermal, Sermaize-les-Bains. The cost of the voyage has been fixed at 1150 francs which includes all expenses throughout the voyage. English doctors desirous of participating in this trip are asked to communicate without delay with Madame M. C. Juppé-Blaise, representative of the French Spas, at the Office Français du Tourisme, 56, Haymarket, London, S.W. 1.

UNIVERSITY OF LONDON: LONDON HOSPITAL MEDICAL COLLEGE.—The Liddle Triennial prize of £120 for 1925–26, which is open to public competition, will be awarded for the best essay on the Ætiology and Treatment of Primary High Blood Pressure. The essays must be submitted not later than Jan. 30th, 1926, addressed to the Dean of the College, from whom further particulars may be obtained.

NATIONAL HOSPITAL FOR DISEASES OF THE HEART. On June 13th the foundation-stone of the extension to the out-patient department of the hospital in Westmoreland-street, London, W. 1, was laid by the Grand Master of the Order of Crusaders, Colonel W. Faber. About 300 Crusaders in their striking costumes attended service at St. Marylebone Parish Church and afterwards proceeded to the ceremony, led by the sword-bearer. After the stone had been laid, the Chairman, Mr. E. R. Morris, at a meeting in the main hall, outlined the growth and work of the hospital since its inception 68 years ago. About £7000, he stated, was required to cover the cost of the extensions.

ROYAL COMMISSION ON NATIONAL HEALTH INSURANCE.—The thirty-first meeting of the Commission was held at the Home Office, Whitehall, on June 11th, Lord Lawrence of Kingsgate in the chair. Evidence as to the nature, extent, cost, and administrative arrangements of optical and ophthalmic treatment of insured persons was given by the Joint Council of Qualified Opticians, represented by Mr. J. H. Sutcliffe, Mr. F. W. Bateman, and Dr. Margaret Dobson; by the British Optical Association, represented by Mr. W. B. Barker, Mr. McHoul, and Mr. Meynell; by the Council of British Ophthalmologists, represented by Mr. E. Treacher Collins, Mr. J. Herbert Fisher, and Mr. M. S. Mayou; and by the Ophthalmic Benefit Committee, represented by Mr. H. L. Eason, Mr. C. F. Harford, and Mr. G. H. Pooley. Proof copies of the oral evidence and the relative statement submitted at the meeting of May 21st are now on sale at H.M. Stationery Office (2*s.* 3*d.*).

POWERS OF MEDICAL REFEREES.—An important reserved judgment in regard to the rights of a medical referee under the Workmen's Compensation Act was delivered by Judge Ruegg, K.C., at Stoke-on-Trent on June 3rd. A colliery engine-man claimed compensation from the Berryhill Collieries, Limited, Stoke-on-Trent. The applicant was certified to be suffering from miner's nystagmus by the certifying surgeon, but the employers appealed to the medical referee, who found that the man was suffering from nystagmus at the time of the examination, but was not thereby disabled from earning full wages at the work at which he was employed. The question was whether he (the judge) had any power to interfere with that finding. In his judgment he had not, and he dismissed the application for compensation. The judge's own experience was that it would be very difficult for any court to find a man had a reasonable chance of obtaining employment if he had been suffering from nystagmus, and he remarked, "I have the gravest doubt in my own mind as to whether the Act of Parliament ever meant that the medical referee should have such extensive powers given to him. It is clearly meant that he should have final power with regard to the disease, but with regard to all such complicated questions as now arise, such as the state of industries existing in various districts, that it was ever meant it should devolve upon him I very much question."

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—Dr. A. F. Hurst will lecture for the Fellowship of Medicine on Friday, June 26th, at 5.30 P.M., in the West Lecture Hall, 1, Wimpole-street, and the subject chosen is the Treatment of Cholecystitis and the Prevention of Gall-stones. From June 22nd to July 4th the London Temperance Hospital will hold a special course from 4.30 in the afternoon for the convenience of those in general practice. Clinical demonstrations, illustrated by cases, will be given, followed by short lectures lasting half an hour, and the fee for the course is £1 1*s.* A course in urology has been arranged by the St. Peter's Hospital from June 29th to July 25th. The Queen's Hospital for Children has organised a two weeks' course from July 6th to the 18th. Classes will be held from 10 A.M. throughout the day in the various departments of the hospital. A course dealing with the diagnosis and treatment of nervous diseases will take place at the West End Hospital (O.P. Department, 73, Welbeck-street) from July 27th to August 15th. Other special courses in August are: A vacation course at the Prince of Wales's General Hospital (N.E. London Post-Graduate College), Tottenham, from August 3rd to the 15th—instruction will be offered from 10.30 A.M. until 5.30 P.M. daily; a fortnight's intensive course at the Queen Mary's Hospital (Stratford), and a urology course continuing throughout the month at the All Saints' Genito-Urinary Hospital. Copies of the syllabuses and the programme of the Fellowship of Medicine may be obtained from the Secretary at 1, Wimpole-street, London, W. 1.

A LIVERPOOL HEART HOSPITAL.—It is proposed, at a cost of £10,000, to convert a private residence in Liverpool, not far from the University, into a hospital for the treatment of heart cases. There are said to be 1500 people crippled by valvular disease of the heart in Liverpool and its district.

NEW INFIRMARY FOR HARROGATE.—The governors of the Harrogate Infirmary have adopted the recommendation of the General Committee to build a new hospital of 100 beds, capable of extension to 150 beds, at an estimated cost of about £70,000. The building will probably be completed by the summer of 1927. The site on Knaresborough-road cover six acres and will cost £6000.

REBUILDING OF MIDDLESEX HOSPITAL.—In the exercise of their discretion as trustees of the Zunz Bequest, Mr. Henry Gardner and Mr. Sam Baer have made a grant of £20,000 to the fund for the rebuilding of the hospital. The money will be used for the reconstruction and maintenance of the Annie Zunz Ward, which was provided in 1908 by a grant of £5000 from the same bequest. Towards the £500,000 required for the rebuilding about £140,000 has now been given. The students of the hospital have each promised to subscribe a penny a day for the next five years in addition to their individual gifts.

ROYAL COLLEGE OF SURGEONS IN IRELAND: ELECTION OF PRESIDENT AND OFFICERS.—The election of President, Vice-President, and Council of the College was held on June 3rd. Mr. R. Charles Butler Maunsell was re-elected President and Mr. Andrew Fullerton was re-elected Vice-President. The following were elected members of Council: Mr. John Benjamin Story, Sir Thomas Myles, Major-Gen. R. H. S. Sawyer, Sir Arthur Chance, Sir Robert H. Woods, Mr. Richard Lane Joynt, Mr. Thomas Eagleson Gordon, Sir F. Conway Dwyer, Mr. Alexander J. Blayney, Sir William Taylor, Mr. Trevor N. Smith, Mr. G. E. Pugin Meldon, Mr. Howard Stevenson, Mr. Seton Pringle, Sir William I. de C. Wheeler, Sir C. Arthur K. Ball, Mr. R. Atkinson Stoney, Mr. Edward Sheridan, and Mr. Adams A. McConnell.

CHELSEA CLINICAL SOCIETY. — At the annual general meeting of this society held recently at St. George's Hospital the following office-bearers, having been nominated by the Council, were duly elected:—President: Dr. Seymour Price. Vice-Presidents: Sir Thomas Parkinson, Dr. Rivers Pollock, Dr. E. Young, Dr. J. D. Rolleston, and Mr. Ivor Back. Council: Dr. H. A. Philpot, Dr. W. E. Robinson, Mr. Graeme Anderson, Mr. Gaymer Jones, and Mr. D. C. Fitzwilliams. Treasurer: Dr. K. Eckenstein. Secretaries: Mr. A. R. Thompson and Mr. L. D. Bailey. Dr. Gordon Lane, the retiring president, then opened a discussion on Facultative Diagnosis—the use of our powers of clinical diagnosis without resort to laboratory assistance—in which Dr. C. O. Hawthorne, Mr. Fitzwilliams, Mr. Ivor Back, Dr. Crewdson Thomas, and Mr. Thompson took part.

HARVEIAN SOCIETY OF LONDON.—The annual dinner of the Society was held at the Connaught Rooms, Great Queen-street, W.C., on June 11th, the President, Sir John Broadbent, in the chair. After the loyal toasts, the Harveian Society was proposed by Sir Humphry Rolleston, who spoke of the early history of the Society, founded in 1841, and of the value of the Harveian lectures which had been delivered annually for the past 50 years. In his response the President quoted some amusing passages from the life of William Harvey, when Harvey was asked to draw up rules for the better management of St. Bartholomew's Hospital. The main improvement Harvey suggested was the complete subservience of the surgeons to the physicians. Sir John Broadbent expressed the hope that members of the Society would support individually the Harvey memorial tower at Hempstead church, and referred to the generous gift which had recently been made to the Society by Dr. George Buckston Browne. Dr. Browne donated £1000, the interest on which was to be used for a £50 prize and medal, to be awarded biennially by the Society. The health of the visitors was pleasantly proposed by Mr. Zachary Cope, to which Sir William Leishman, Sir StClair Thomson, and Sir Edward Marshall-Hall replied. Sir William Leishman, in the course of his reply, paid a tribute to the memory of his old colleague and former president of the Society, Dr. Reginald Dudfield, who died recently. "Few understood," he said, "the value of Dudfield's work both to the State and to the Corps with which he served." Sir StClair Thomson entertained the company, and Sir Edward Marshall-Hall spoke reminiscently, prophetically, and convincingly.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, JUNE 10TH.

Wages in Clinical Thermometer Industry.

Colonel DAY asked the Minister of Labour whether he was aware that in the clinical thermometer industry male workers of full age were being paid wages which averaged less than £2 for a full working week of from 48 to 60 hours; and was he prepared to accede to the request of the workers employed in that industry for the establishment of a trade board.—Mr. BETTERTON (Parliamentary Secretary to the Ministry of Labour) replied: An inquiry was recently made into the earnings in this trade. The report of the inquiry is at present under consideration, and I am not yet in a position to say what action will be taken.

Advertisements on Vaccination Notices.

Mr. ROBERT MORRISON asked the Minister of Health if he was aware that soap advertisements were printed upon the back of the notice of the requirements of vaccination; what amount was derived from this source; and whether it was intended to continue this means of raising revenue.—Sir KINGSLEY WOOD (Parliamentary Secretary to the Ministry of Health) replied: The answer to the first part of the question is in the affirmative, and to the last part in the negative. As regards the second part, the amount received for the sale of the advertising space in the current issue of the notice was £135.

Supplies of Liquid and Dried Milk in Local Areas.

Mr. GROVES asked the Minister of Health the quantity and money value of liquid and dried milk supplied to mothers and children during the quarter ended March 31st, 1924, in the county borough of West Ham, the borough of Poplar, the city of Birmingham, and the country generally.—Sir KINGSLEY WOOD replied: The following statement contains the information asked for as regards the three local areas mentioned in the question:—

	Quantity.	Money value. £	s.	d.
West Ham	Dried milk, 61,625 lb. .. Liquid milk	2750	0	0*
			—	
Poplar	Dried milk, 3733 lb. .. Liquid milk, 139,974 pints	279	19	6†
		1950	3	5
Birmingham	Dried milk, 17,772 lb. .. Liquid milk	1222	0	0‡
			—	

* Includes the sum of £1,596 9s. 2d. paid by recipients.
† Includes the sum of £194 17s. paid by recipients.
‡ Amount paid for dried milk supplied at cost price.

The information desired as regards the country generally is not available, but for the financial year 1923–24 the estimated gross expenditure of local authorities in England and Wales on milk supplied to mothers and children was £383,878, and the estimated net expenditure was £174,089.

Putative Fathers and Maintenance Expenses.

Major STEEL asked the Minister of Health whether he would consider the advisability of giving power to boards of guardians to take legal proceedings, prior to the birth of a child, against the putative father of an illegitimate child for payment of the cost of maintenance of the woman during such time as she should be in the Poor-law institution before the birth of the child and for the expenses of her confinement.—Mr. NEVILLE CHAMBERLAIN replied: The Government are not in a position to undertake legislation of the kind suggested at the present time.

Small-pox in Nigeria.

Mr. COMPTON asked the Secretary of State for the Colonies whether vaccination was compulsory in Nigeria; if so, at what age or ages; and how many deaths from small-pox had been reported in the territory in question during the last 10 years for which the figures were available.—Mr. AMERY replied: Under Chapter 53 of the Laws of Nigeria every person in the colony or southern provinces is liable to be vaccinated, and the parents of any child are required to bring it for vaccination within three months of birth. In the northern provinces similar provisions may be made by Orders relating to particular areas from time to time when considered necessary owing to the occurrence of small-pox. It is not possible, however, to enforce the Ordinance strictly, and the number of vaccinations performed between 1913 and 1923 amounts only to 1,890,237 in a population of over 18,000,000. As registration of deaths is not and cannot be made compulsory it is not possible to give any figures which would indicate even approximately the number of deaths from small-pox. The numbers who died in hospital from this disease in recent years are: 1919, 30; 1920, 341;

1921, 182; 1922, 97; and 1923, 44. But it is known that these figures bear no relation to the total mortality.

THURSDAY, JUNE 11TH.

Medical Examination of Persons Charged with being Drunk.

Colonel DAY asked the Home Secretary whether his attention had been drawn to a police regulation which did not permit of a person in custody on a charge of being drunk whilst in charge of a motor car being examined by a doctor called by any person other than the person so charged; was he aware that in the case of the Commissioner of Police *v.* Maloney, heard before Mr. St. John Morrow, at the West Ham police court on May 13th, attention to this matter was drawn by the learned magistrate; and whether the regulations now in force would be amended to allow a person charged to be examined under such circumstances by a duly qualified medical practitioner, if so desired by the friends or relatives of such person.—Sir WILLIAM JOYNSON-HICKS replied: I understand that the regulations were framed in their existing form after very careful consideration, but I am looking into the whole question in the light of the particular case to which the hon. Member has been good enough to call my attention.

Invalids and Street Noises.

Mr. JOHN BECKETT asked the Home Secretary if he was aware of the annoyance to people with children and to invalids of noisy sports, motor cycles and cars being perpetually ridden up and down residential streets; and whether the police were empowered and instructed to deal with this annoyance.—Sir WILLIAM JOYNSON-HICKS replied: Yes, Sir. The police are doing what they can to deal with this matter. During 1924, 4774 persons were prosecuted in the metropolitan police district for using inefficient silencers, and there were 4371 convictions. For the first five months of this year there have been 1593 similar prosecutions.

Contributory Pensioners and Medical Benefit.

Mr. RHYS DAVIES asked the Minister of Health whether, under the widows', orphans', and old age pension contributory scheme, a person insured under the National Health Insurance Acts would be entitled after reaching the age of 65 years to receive medical benefit and/or additional benefits either in cash or kind.—Mr. NEVILLE CHAMBERLAIN replied: The existing position with regard to benefits under the National Health Insurance Act is not affected by the provisions of the Bill before Jan. 2nd, 1928. As from Jan. 2nd, 1928, members of an approved society will be entitled, after they attain the age of 65, to medical benefit and to any non-cash additional benefits provided by the society, but they will not be entitled to any additional benefits payable in cash.

Maternity Centres and Birth Control.

Mr. THURTLE asked the Minister of Health if he had received a copy of a resolution recently passed by a conference of labour women asking that medical officers of maternity centres should be allowed to give information on birth control to married women who desired it; and whether he was now prepared to accede to the request contained in the resolution.—Mr. NEVILLE CHAMBERLAIN replied: The answer to the first part of the question is in the affirmative. As regards the second part, I am in agreement with the views of my predecessors that institutions provided at the cost of public funds should not be used for so controversial a purpose without express directions from Parliament. In the case of women attending maternity or infant welfare centres who, on medical grounds, appear to need such information as is mentioned in the question, my view is that these cases should be referred to a private doctor or a hospital.

Mental Defectives in Workhouses.

Mr. RENNIE SMITH asked the Minister of Health what were the figures for the years 1914 and 1924 of the mentally defective inmates and the total number of inmates of workhouses.—Mr. NEVILLE CHAMBERLAIN replied: The total numbers of persons in receipt of Poor-law relief in Poor-law institutions on Jan. 1st, 1914, and Jan. 1st, 1924, were 248,030 and 203,757. The number of inmates of such institutions on Jan. 1st, 1914, who were insane was 19,965. In addition there was an unknown number of mentally defective persons. The number of mentally defective persons, including insane persons, in receipt of Poor-law relief in such institutions on Jan. 1st, 1924, was 25,207.

MONDAY, JUNE 15TH.

Breeding of Beneficial Parasites.

Mr. CADOGAN asked the Secretary of State for the Colonies whether he had any information showing that the experiment of breeding beneficial parasites with a view to fighting insect plagues in our overseas Dominions had proved a success.—Mr. ORMSBY-GORE replied: Yes, Sir, I understand from the Director of the Imperial Bureau of Entomology that during the 18 months in which this experiment was being carried out two successful introductions of beneficial parasites were effected—namely, a parasite of the pear-slug which is causing serious damage to orchards in New Zealand, and a parasite which was introduced from Nyasaland into Nigeria with a view to control of *Glossina tachinoides*, a species of tsetse-fly prevalent in Nigeria. Two parasites of the earwig have also been introduced into New Zealand, but owing to difficulties in rearing them in the laboratory there the strains have died out. Unfortunately, this work had to be suspended, but it is hoped to resume it shortly.

Venereal Disease in the Straits Settlements.

Mr. PETHICK-LAWRENCE asked the Secretary of State for the Colonies whether the legislative council of the Straits Settlements had submitted to him a draft Bill embodying any of the proposals of the committee appointed to investigate the spread of venereal disease in the Straits Settlements which recommended in favour of the licensing and registration of all brothels by a Government official to be called the Controller, and the submission to a weekly medical examination of all prostitutes; and what action he proposed to take in the matter.—Mr. ORMSBY-GORE replied: I have received from the Governor of the Straits Settlements a draft Bill which embodies the proposals of the committee referred to by the hon. Member. The Bill has been under consideration by the Advisory Committee on Social Hygiene, and I am now awaiting their report.

Preservatives in Foodstuffs.

Mr. WHITELEY asked the Minister of Health whether the new regulations regarding preservatives in foodstuffs were based on evidence that anyone had ever suffered from boron preservative in food; and, if not, whether he was prepared to withdraw such regulation.—Mr. N. CHAMBERLAIN replied: The harmfulness of boron preservatives was thoroughly considered by the departmental committee which inquired into the subject. Their report, to which I would refer the hon. Member, shows that boric acid in small doses has been known to produce ill-effects, and that in continued doses it is likely to impair the health of the consumer.

TUESDAY, JUNE 16TH.

British Soldiers Poisoned at Cologne.

Brigadier-General BROOKE asked the Secretary of State for War whether his attention had been called to the poisoning of 40 soldiers of the York and Lancaster Regiment at Cologne, of whom two had died; to what food the poisoning was traced; whether this food was supplied by the Navy, Army, and Air Force Institute or by a private contractor; whether any special instructions were issued to Army cooks on the handling of tinned foods, and, if not, whether he would consider the issuing of such instructions to units in future for display in prominent places in all cookhouses; and whether he would lay the result of the court of inquiry at Cologne before the House.—Captain KING replied: I am at present awaiting a report on this matter which has been called for; I will communicate further with the hon. and gallant Member as soon as possible. I understand that no soldiers died as a result of the poisoning, and that they were all well again the following day, with the exception of one man, who has now recovered.

An Overdose of Strychnine.

Colonel DAY asked the Minister of Health whether his attention had been drawn to a recent case at the Billericay isolation hospital, Essex, where a patient named Joseph Drage died as a result of the administration of an overdose of strychnine by a temporary unqualified nurse; and would he take such action as would allow of only fully qualified nurses being allowed to administer poisonous medicines to patients undergoing hospital or institutional treatment.—Sir KINGSLEY WOOD replied: My right hon. friend's attention has been called to this most regrettable occurrence, and he has communicated with the Billericay Rural District Council, to whom the hospital belongs. He has no control over the internal administration of isolation hospitals, but he is informed that the district council are taking all possible steps to prevent the recurrence of such an accident.

THE LATE DR. THOMAS STEVENSON.—The death of Dr. Stevenson took place unexpectedly last week at Dyserth. Dr. Stevenson had served for 30 years on the staff of St. Paul's Eye Hospital, Liverpool, and for many years had been senior surgeon. He took an active interest in the Literary and Philosophical Society, of which he was president-elect. In France, during the war, he held the rank of Lieut.-Colonel in the R.A.M.C. A special memorial service, held in his memory in the Lady Chapel of the cathedral, was largely attended.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Tuesday, June 23rd.

GENERAL MEETING OF FELLOWS: at 5.30 P.M.
Ballot for election to the Fellowship.

Saturday, June 27th.

ANÆSTHETICS:
Provincial Meeting in the Physiological Lecture Room, Manchester University.
Discussion on
Chloroform, to be opened by Dr. H. P. Fairlie.
Demonstration:
Mr. S. R. Wilson and Dr. S. McSwiney (Manchester): Animal Demonstration showing Effects of Adrenalin Injections during Ether and Chloroform Anæsthesia.
Exhibition of apparatus in the laboratories.
Will those wishing to attend kindly apply without delay to Dr. H. R. Phillips, 2, Cumberland Mansions, Bryanston-square, W.

MEDICO-LEGAL SOCIETY.
TUESDAY, June 23rd.—8.30 P.M., Annual General Meeting at the Royal Society of Medicine, 1, Wimpole-street, W. *Business:* 1. Election of Officers and Council for Session 1925-26. 2. Report of the Hon. Secretaries presented to and adopted by the Council. 3. Report of the Hon. Treasurer and presentation of accounts.
After the Meeting there will be a discussion on a Report, made by a Committee to the Council of the Society dealing with the foundation in London of a Medico-Legal Institute.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, 1, Wimpole-street, W.
MONDAY, June 22nd, to SATURDAY, June 27th.—WEST LECTURE HALL, Royal Society of Medicine, 1, Wimpole-street. Lecture arranged by the Fellowship of Medicine and open to all members of the medical profession. At 5.30, Dr. A. F. Hurst on The Treatment of Cholecystitis and the Prevention of Gall-stones. Friday, June 26th, LONDON TEMPERANCE HOSPITAL, Hampstead-road, N.W. Course in Medicine, Surgery, and the Special Departments for general practitioners and others. Afternoons only, 4.30 to 6 daily. Clinical demonstrations for one hour and a lecture for half an hour.—CHELSEA HOSPITAL FOR WOMEN, Arthur-street, S.W. Post-graduate Course in Gynæcology. Lectures and demonstrations daily. Operations, pathological demonstrations. Third week.—LONDON SCHOOL OF HYGIENE AND TROPICAL MEDICINE, Endsleigh Gardens, N.W. Tuesday and Thursday at 2. Lecture-demonstration by Dr. P. Manson-Bahr and Dr. G. C. Low.—ST. JOHN'S HOSPITAL FOR DISEASES OF THE SKIN, Leicester-square. Daily demonstrations in the O.P. Departments. Bi-weekly lectures by Dr. Roxburgh and Dr. Dore.—LONDON LOCK HOSPITAL, 91, Dean-street, W. Comprehensive Course. Daily out-patient instruction and lectures dealing with the diagnosis and treatment of V.D.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith, W.
MONDAY, June 22nd.—12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Dr. Scott Pinchin: Medical Out-patients. 2 P.M., Mr. Donald Armour: Operations.
TUESDAY.—11 A.M., Mr. Endean: Venereal Diseases. 12 noon, Dr. Burrell: Chest Cases 3 P.M., Dr. Pritchard: Medical Wards.
WEDNESDAY.—11 A.M., Medical Registrar: Medical Wards. 2 P.M., Mr. Tyrrell Gray: Operations. 2 P.M., Dr. Owen: Medical Out-patients.
THURSDAY.—11 A.M., Sir Henry Simson: Gynæcological Wards. 2 P.M., Mr. MacDonald: Genito-Urinary Dept. 2 P.M., Mr. Simmonds: Surgical Out-patients.
FRIDAY.—12 noon, Surgical Registrar: Surgical Pathology. 2 P.M., Mr. Sinclair: Surgical Out-patients. 2 P.M., Mr. Vlasto: Throat, Nose, and Ear Dept.
SATURDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Operations on Throat, Nose, and Ear.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M., In-patients, Out-patients, Operations, Special Departments.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.
TUESDAY, June 23rd.—4.30 P.M., Dr. F. G. Crookshank: The Sympathetic Nervous System.
FRIDAY.—4.30 P.M., Dr. F. L. Provis: Gonorrhœa in Women.
Daily: Medical and Surgical Clinics, Clinics in the various Special Departments, Surgical Operations, &c.

NATIONAL HOSPITAL FOR THE PARALYSED AND EPILEPTIC, Queen-square, Bloomsbury, W.C. 1.
POST-GRADUATE COURSE: MAY–JUNE.
CLINICAL LECTURES AND DEMONSTRATIONS.
MONDAY, June 22nd.—2 P.M., Out-patient Clinic: Dr. Hinds Howell. 3.30 P.M., The Diagnosis of Cerebral Tumours: Dr. Riddoch.
TUESDAY, June 23rd.—2 P.M., Out-patient Clinic: Dr. Walshe. 3.30 P.M., Compression Paraplegia: (2) Intramedullary: Dr. Grainger Stewart.
THURSDAY, June 25th.—2 P.M., Out-patient Clinic: Dr. Kinnier Wilson. 3.30 P.M., Localisation in the Cerebellum: Dr. Gordon Holmes.
FRIDAY, June 26th.—2 P.M., Out-patient Clinic: Dr. Gordon Holmes. 3.30 P.M., Surgery of Spinal Cord: Mr. Percy Sargent.

COURSE OF LECTURES AND DEMONSTRATIONS ON THE PATHOLOGY OF THE NERVOUS SYSTEM.
MONDAY, June 22nd.—12 noon, The Neuroglia: DR. J. G. Greenfield.
A COURSE OF CLINICAL DEMONSTRATIONS will be given by Dr. H. J. Macbride, chiefly on METHODS OF EXAMINATION OF THE NERVOUS SYSTEM, in the Wards at 10 A.M. on Tuesdays and Fridays. The Fee for this Course is £2 2s.
Mr. Armour and Mr. Sargent operate at the Hospital on Tuesday and Friday mornings at 9 A.M., or at such other times as may be announced.
Fees should be paid to the Secretary of the Hospital at the Office on entering for the Course.
J. G. GREENFIELD, Dean of Medical School.

THE LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, Leicester-square, W.C. 2.
TUESDAY, June 23rd.—5 P.M., Dr. Roxburgh: Psoriasis.
THURSDAY.—5 P.M., Dr. Dore: Animal Parasites.

HOSPITAL FOR SICK CHILDREN, Gt. Ormond-st., W.C.
THURSDAY, June 25th.—4 P.M., Mr. Tyrrell Gray: Intussusception.

QUEEN CHARLOTTE'S MATERNITY HOSPITAL, Marylebone-road, N.W.
THURSDAY, June 25th.—5 P.M., Mr. L. C. Rivett: Mechanical Difficulties in Labour.

THE JAMES MACKENZIE INSTITUTE FOR CHEMICAL RESEARCH, St. Andrews.
MONDAY, June 22nd.—10.45 A.M., Dr. ORR: Angina Pectoris. 12 noon, Dr. Hynd: Clinical Examination of Urine. 4.30 P.M. (at the Bute Medical Buildings), Prof. Waterston: Structure and Development of the Heart.
TUESDAY.—10.45 A.M., Dr. M. Ramsay: Ocular Manifestations of Vascular Disease. 12 noon, Demonstrations of Electrical Ophthalmoscope. 4 P.M., Dr. ORR: Intermittent Claudication.
WEDNESDAY.—10.45 A.M., Dr. Bryson: Shoulder Pain. 12 noon (at the Bute Medical Buildings), Prof. Waterston: The Sympathetic System in Relation to Muscle. 4 P.M., Prof. Herring: Internal Secretions.
THURSDAY.—10.45 A.M., Dr. Rowland: Albuminuria in Childhood. 12 noon, Dr. Hynd: The Nature of Urinary Protein. 4 P.M. (at the Royal Infirmary, Dundee), Prof. Price: Clinical Demonstration.
FRIDAY.—10.45 A.M., Dr. Paton: Observations on School-children. 12 noon, Dr. Bryson: Mental States in Disease. 4 P.M., Concluding Address.

Appointments.

DICKSON, AGNES F., M.B., Ch.B. Glasg., has been appointed Resident Medical Superintendent at Darnley Hospital, Renfrewshire, and Assistant Medical Officer in connexion with Maternity Service and Child Welfare Work in the County.

MADDEN, FRANK COLE, O.B.E., M.B., B.S. Melb., F.R.C.S. Eng., Emeritus Professor of Surgery in the Royal School of Medicine, Cairo, and Consulting Surgeon to Kasr-el-Ainy Hospital.

WILKINSON, A. GEDEN., M.B., Ch.B. Manch., D.P.H., D.T.M., Part-time Medical Officer of Health for the Egham Urban District.

Metropolitan Hospital, Kingsland-road, E.: MCCULLAGH, W. McK. H., M.B., B.Ch. Belf., F.R.C.S. Eng., Surgeon for Diseases of Women; and WHITE, C., M.D. Lond., F.R.C.P. Lond., F.R.C.S. Eng., Consulting Surgeon.

Middlesex Hospital: COCKAYNE, E. A., M.D. Oxf., F.R.C.P. Lond., Physician; and BOLDERO, H. E. A., M.B., B.Ch. Oxf., M.R.C.P. Lond., Assistant Physician.

Queen Charlotte's Maternity Hospital: SAUNDERS, R. M., M.B., Ch.B., Senior Resident Medical Officer; and HAMILTON, G. E. R., M.B., B.S., Assistant Resident Medical Officer.

Certifying Surgeons under the Factory and Workshop Acts: ASHTON, D. A., M.B., Ch.B. Manch. (Yaxley, Huntingdon); MACCORMACK, C. P. V., L.R.C.P. & S. Irel. (Calvert, Buckingham).

Vacancies.

For further information refer to the advertisement columns.

Aberdeen University.—Second Asst. in Pathology. £250 12s.
Barnsley, Beckett Hospital and Dispensary.—Jun. H.S. at rate of £140.
Birmingham, City Mental Hospital.—Asst. M.O. £350.
Birmingham Public Health Dept. (Tuberculosis Section).—Asst. Tuberculosis and Sanatorium Officer at rate of £500.
Birmingham and Midland Hospital for Skin, &c.—Hon. S.
Blackburn and East Lancashire Royal Infirmary.—Third H.S. £150.
Bradford Royal Infirmary.—Res. Surg. O. £250.
Cambridge, Addenbrooke's Hospital.—H.S. at rate of £130.
Chester Royal Infirmary.—Asst. H.S. £150.
City of London Hospital for Dis. of Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. at rate of £100.
Glamorgan County Council.—Dental S. £500.
Gordon Hospital, Vauxhall Bridge-road, S.W.—Res. H.S. at rate of £75.
Great Yarmouth Hospital.—H.S. at rate of £150.
Hospital for Consumption and Diseases of the Chest, Brompton, S.W.—H.P. for six months. £50.
Ilford Urban District Council.—Asst. M.O.H. £600.
King's College for Women, Household and Social Science Dept., Campden Hill-road, W.—Asst. Lecturer in Hygiene. £200.
Lanchester Rural District Council, &c.—M.O.H. £800.
Leicester Royal Infirmary.—H.S. at rate of £125.
Manchester, Ancoats Hospital.—Res. S.O. £200. Also H.S. at rate of £100.
Maudsley Hospital, Denmark Hill, S.E.—Asst. M.O. About £440.
Metropolitan Asylums Board, Mental Hospitals Service.—Jun. Asst. M.O. £500.
National Hospital for the Paralysed and Epileptic, Queen-square, W.C.—Asst. P.
Newcastle-on-Tyne, Royal Victoria Infirmary.—Hon. Asst. S.
Sheffield, Jessop Hospital for Women.—Sen. Res. O. at rate of £250.
Sheffield, Winter-street Hospital.—Jun. Asst. Tub. O. £250.
Sudan Government, Wellcome Tropical Research Laboratories, Khartoum.—Asst. Bacteriologist. £E.720.
Sunderland Royal Infirmary and Children's Hospital.—Hon. S. for Nose, Throat, and Ear work.
Surrey County Council.—Asst. M.O.'s in Pub. Health Dept. £600.
West Bromwich and District Hospital.—Res. Asst. H.S. £180.
Willesden General Hospital, Harlesden-road, N.W.—Vacancy on Hon. Med. Staff.
Winchester, Royal Hampshire County Hospital.—H.P. £150.

Births, Marriages, and Deaths.

BIRTHS.

BRIGGS.—On June 10th, at Hawes Hill Farm, Holyport, Berks, the wife of Percy J. Briggs, M.R.C.S., of a daughter.
CAMPBELL.—On June 12th, at Pope's Grove, Twickenham, the wife of Dr. J. M. H. Campbell, of a daughter.
DERHAM-REID.—On June 13th, at Auchinellan, St. Helens-road, Bolton-le-Moors, the wife of James Derham-Reid, *M.C.*, M.R.C.S. Eng., L.R.C.P. Lond., Maj. R.A.M.C.T. (ret.) of a daughter.
PAUL.—On June 12th, at Tate-road, Sutton, Surrey, the wife of D. H. Paul, M.D., of a daughter.
ROBERTSON.—On June 8th, at a nursing home, the wife of Dr. R. K. Robertson, Brocco Bank, Sheffield, of a daughter.

MARRIAGES.

AINSCOW—SIDDELEY.—On June 11th, at St. Nicholas Church, Kenilworth, Warwickshire, James Arthur Ainscow, M.B., Ch.B., to Nancy Mabel Mercer, elder daughter of Mr. J. Davenport Siddeley and Mrs. Siddeley, of Crackley Hall, Kenilworth.
GATHERGOOD—BATHO.—On June 9th, at St. Andrew Undershaft, St. Mary Axe, E.C., Leslie Somerville Gathergood, M.A., M.D. Camb., to Madeline, only daughter of Mr. Alderman and Mrs. Batho, of Summit House, Frinton-on-Sea, Essex.
HEATH—COLLIER.—On June 6th, at the Brompton Oratory, William Powell Heath, of Nottingham, second son of the late Mr. and Mrs. T. H. Heath, of Crewe, Cheshire, to Isabel Martha Collier, M.B., M.R.C.S., youngest daughter of Mr. and Mrs. John Collier, of Sefton Park, Liverpool.
HEWER—CHAMPNEY.—On June 10th, at Bristol, Christopher Langton-Hewer, M.B., B.S., to Doris Phœbe, youngest daughter of Mr. and Mrs. D'Arcy Champney, of Bristol.
YATES—FAGGE.—On June 10th, at St. Marylebone Church, Henry Yates, M.A., M.B., B.Ch., to Florence Dora, second daughter of Mr. and Mrs. C. H. Fagge, of Devonshire-place.

DEATHS.

AITKEN.—On June 11th, at Portland-road, N., David William Aitken, M.B., C.M.Edin. (late of Edinburgh).
CLIPPINGDALE.—On June 6th, Samuel Dodd Clippingdale, F.R.C.S. Eng., M.D. Aberd., late of Holland Park-avenue.
FERGUSON.—On June 8th, at Edinburgh, Edward Ferguson, Fleet Surgeon, Royal Navy (retired), in his 74th year.
PRICE.—On June 13th, at Wellington-square, Chelsea, Major-General William S. M. Price, late A.M.S., aged 81.
WILLIAMSON.—On June 6th, at a London nursing home, Emma, the dearly-beloved wife of R. T. Williamson, M.D., F.R.C.P., of Barnes, London, S.W. (formerly of Manchester), aged 55

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Comments, and Abstracts.

FRUIT AND VEGETABLES IN LONDON.

AN outdoor Chadwick lecture on the Sources of the Fruit and Vegetable Supply of London was given by Sir A. Daniel Hall, F.R.S., at the Chelsea Physic Garden on June 11th, when Sir William J. Collins presided. London, said the lecturer, owed its earlier supplies of fruit and vegetables to the settlement of refugees from Flanders and France—e.g., Richard Harrys, fruiterer to King Henry VIII. made an orchard at Teynham, Kent, with "plantes from beyond the seas" and this became the "chief mother of all the orchards"—the old market gardens and orchards of Kent, Middlesex, and Surrey on the "brick earth" deposits of the Thames valley. To-day supplies are drawn from world-wide sources. Apples can be bought the whole year round, although English apples are only in season in August, September, and October. The first early cherries coming from France round Angers get people into the way of eating cherries by the time English cherries are ready. Strawberries will not travel overseas; the only strawberries coming from any distance are brought from the Clyde valley some four to six weeks later than the main crop varieties. Of the 8 million hundredweight of oranges imported into England in 1923, 6¼ million came from Spain. Much development of orange-growing is going on in Palestine, whence comes the Jaffa orange, and in South Africa and Australia, in those places where irrigation water is available. Nearly 1 million hundredweight of lemons come from Spain and Italy. Some 12 million bunches of bananas reach this country from Canary Islands, West Indies, and Central America.

Potatoes and Greens.

We are practically self-supporting as regards the 3 million hundredweight potatoes consumed; only 5 per cent. of the supply are imported. The first potatoes on the market come from the Canary Islands, especially Teneriffe, Spain, Egypt, and Malta. The earliest English arrive in May from the Scilly Islands, followed shortly by supplies from Penzance and Jersey, succeeded very quickly by those from near St. Malo and the Ayrshire coast near Girvan. The London main crop of potatoes comes chiefly from Lincolnshire, the Fens, Kent, and the Lothians. The "top of the market" is attained by the Dunbar red, a potato grown in the light red-coloured soil round Dunbar; no matter how often it is reheated it retains a white colour, an important characteristic of a potato to be consumed possibly after numerous reheatings in a restaurant. The growing of tomatoes has now become very largely an English trade; of the 3000 acres of glass in the Lea valley near Cheshunt half is devoted to tomato-growing; the best grower can produce 40 tons to the acre. In 1923 the Canaries sent over a million hundredweight between October and August, the Channel Islands half that quantity between April and December, Holland rather less between May and November. The chief centres of green vegetable production are North Kent, Middlesex, Essex, Bedford, Huntingdon, Worcester, and Wisbech. The Penzance broccoli is in serious competition from Roscoff area with its better packing. Other cauliflowers are received from Italy and St. Malo.

Distribution.

The lecturer next referred to the London wholesale markets, Covent Garden, the Borough, and Spitalfields—which are largely potato markets—Stratford and Brentford, and their methods of doing business. He described how Covent Garden acted as distributing agent to provincial markets. The produce unfortunately passes through the hands of a long chain of persons between the grower and the consumer; the grower sells to a commission agent, who sells to a London wholesale dealer, whose goods are bought by a commission buyer to sell to the retailer; the result is that a cabbage for which the grower gets 1*d.* costs the consumer 6*d.* Nothing but hammering away at the problem will secure fair play for the producer and the consumer.

Sir William Collins, in thanking the lecturer, referred to the undesirability of vegetarianism; Sir James Crichton-Browne to the great value of spinach as a source of vitamins.

Demonstration of Preservative Methods.

After the lecture the audience looked at the exhibit intended to demonstrate methods of preservation of fruit and vegetables displayed by the Chipping Campden (Glos.) Research Station of the University of Bristol, where ten-day courses of instruction are given in this subject. On a table were set out jam made from plums preserved in sulphur dioxide, blackberry and loganberry syrup, bottled carrots, peas, and runner beans, macedoine of vegetables, tomato chutney, and tomato ketchup. The lady demonstrator showed how to seal a tin with the Campden canner. If able to obtain the use of this sealer, which does away

with the expense and trouble of using solder, the housewife and small fruit-grower will be able to can fruits and make a profit. It is hoped that women's institutes will provide themselves with a sealer for the general use of their members. Tins can be obtained by writing to the Research Station; those to hold a reputed pound cost about 1½*d.*; the 2 lb. tins 2½*d.*, while the corresponding price for the 2 lb. glass jar is 11*d.* or 11½*d.* It is understood that some small fruit-growers who started canning fruit have given up as they could not get hold of tins at a reasonable price, while the cost of glass jars was prohibitive.

Standardised Packing.

At the other end of the table was a display of packages used for fruit and vegetables. It included a French lettuce crate (non-returnable), a tomato box (non-returnable), which has largely replaced the "strike" and the 12 lb. handled basket; a 2 lb. (returnable) box for English forced strawberries, and a melon "handle" for Guernsey melons. Packages of this type are recommended by the Ministry of Agriculture. If the grower will (1) use a standardised package which enables the articles to be packed so as to avoid injury, and to be displayed and at the same time handled by market porters, &c.; (2) pack an honest package of goods of a certain standard of quality, he will be allowed to affix to the packet a label issued by the Ministry which serves as a guarantee of quality. Until recently the home grower has been able to dispose of his goods round the corner; foreign growers who grow for export have paid attention to methods of presentation of the articles so successfully that English growers have failed to sell their goods in competition. The Ministry have been obliged to provide instruction at Penzance to prevent the local trade being entirely captured by Roscoff. Non-returnable packages must be in a form convenient for the use of the housewife who gets a better article if she buys it as it leaves the grower; the wholesaler or retailer does not want to break bulk or damage the articles.

In this country with its variable climate gluts of fruit are unavoidable. The Ministry intend using broadcasting to inform the housewife of an approaching glut some three weeks or so beforehand, so that she can make the preparations necessary and assemble the tins, jars or bottles required. A plum glut, for instance, only lasts a week, giving no time for preparation. In leaflet No. 2 of the Research Station a method of weighing jam during its boiling is described whereby the inexperienced may be able to tell when the jam is sufficiently boiled to set when cool and to keep well.

THE NEED FOR MORE AMBULANCES.

AT a recent inquest in Southwark, the coroner, Dr. F. J. Waldo, again called attention to the need for more ambulances in the metropolitan area, if cruel and dangerous delay is to be avoided in the conveyance of street accidents and other urgent cases to the nearest hospital. On the occasion in question a man, 71 years of age, had slipped on a banana skin, and in falling had sustained a simple fracture of one of his thighs, in consequence of which he died. The evidence further showed that he lay on the pavement for more than a quarter of an hour before he was removed. An ambulance arrived 14 minutes after it was first summoned, the delay being due to it having been sent for to pick up another accident case, and this one ambulance was proved to have dealt at that time with five cases in 50 minutes. Incidentally, the policeman who was called to the accident had been in the force for five years but had not attended any course of instruction in first-aid under the St. John Ambulance Association, nor did he exhibit any desire to do so. A verdict of "Accidental death" was returned by the coroner, and the following observations are based upon those made by Dr. Waldo in the course of the inquest and upon the facts proved in the evidence before him. (1) The number of accidents in the streets of London has greatly increased in recent years, and a large proportion of these is caused by motor-driven vehicles. (2) The number of motor cars and other motor-driven vehicles has increased and is increasing rapidly, and there is every prospect of the increase being continued. (3) This points to a constant increase of accidents not only because there will be more motor vehicles, but because the increase in their numbers, and particularly in the number of fast-driven cars and lorries, means the constant influx of inexperienced, and often untrained, drivers. (4) The present number of motor ambulances in the metropolitan district ruled by the London County Council, as distinct from the City, is 11, with a prospect of three more by the end of the year. It is submitted that even then 14 will not be sufficient to deal with the emergencies which must occur. It is not only a question of providing for accidents on their present scale, but for an almost inevitably greater number of them. (5) It has been suggested[1] that the coöperation of the St. John Ambulance Association and of the Metropolitan Asylums Board with the L.C.C. would be of use in ensuring an efficient service, but as far as we are aware no definite alliance for this purpose between these bodies has been effected. (6) A suggestion that ambulances might be housed at fire stations has also been made. At the inquest before Dr. Waldo a witness said that this plan has been adopted with success at Portsmouth. No doubt conditions there are different from those in London, but the utilising of fire stations for ambulances has been condemned by the metropolitan authorities as impracticable, without any convincing reason, so far as we know, having been given to a deeply interested public for the decision. (7) The question of policemen being obliged to take courses of instruction in first-aid is outside that of the provision of ambulances, but we note that Dr. Waldo, who is coroner for the City as well as for Southwark, speaks of the police in the City being obliged to undergo instruction which is optional for police outside its area. This point, presumably, concerns the Home Office. In conclusion, we would point out that when the victim of a street accident has to lie for what seems to sympathetic bystanders an unnecessarily long time waiting for an ambulance, it is inevitable that unfavourable comment, and possibly exaggerated blame, should be directed against the "authorities" in the daily press. In these circumstances the London County Council should feel assured that public opinion will not censure them for extravagance if they should make reasonably ample provision to meet a growing demand.

[1] See THE LANCET, Jan. 17th, 1925, p. 141.

AN EXHIBITION OF INVENTIONS.

THE exhibition held during the past week at the Central Hall, Westminster, was the first of a series of Annual Public Exhibitions of Inventions organised by the Institute of Patentees. The practical results of the series and of the work of the institute, it is hoped, will be the introduction of legislation beneficial to inventors and a just recognition of their work. The way in which inventors have responded to the new movement may be gauged from the fact that nearly 240 inventions were displayed at the exhibition. Of the ten sections into which the inventions were grouped that consisting of domestic and labour-saving devices was the largest, 20 per cent. of the exhibits being produced by women. Exhibits of particular interest in this section were a milk churn and a window fly screen. The novel feature of the former was the lid, so fixed that the milk was hermetically sealed, whilst the mouth of the churn was protected from dirt during transit operations. The fly screen consisted of a cotton gauze spring blind attached to a sash window so that when the latter was opened the screen unrolled to cover the opening. The display of several excellent devices for the automatic disinfecting and cleansing of sanitary systems was indicative of the thought expended on a matter vital to the public health. An invention of direct medical interest was an artificial pneumothorax apparatus, in which air is compressed by the weight of a piston instead of by the customary hydraulic means. The instrument is strong, simple, and portable. The remaining sections of the exhibition, devoted to inventions in mechanical, electrical and wireless engineering, in building and in toys, appealed to a wide public.

RHEUMATOID ARTHRITIS AND OSTEO-ARTHRITIS.

Dr. Robert B. Osgood, of Boston, U.S.A., delivered the Hugh Owen Thomas Memorial Lecture at Liverpool on June 2nd, taking as his subject the differentiation of the pathology and symptoms of "rheumatoid arthritis" and "osteo-arthritis." The former, he said, was a disease of the first half of life, occurring in toxic subjects of the so-called "ptotic" type and not infrequently ushered in by a definite illness, while the latter developed insidiously in persons otherwise well, for the most part in the latter years of life. The ætiology was discussed in some detail. The rheumatoid series of cases clinically were associated in a few cases with definite foci of infection in teeth, tonsils, pelvis, or elsewhere, and in many more with intestinal stasis due in certain instances to lesions susceptible of surgical treatment. The possibility of infective or toxic origin therefore arose—no specific organism, however, could be incriminated. In many cases no definite focus could be found, and surgical measures were not to be recommended unless a definite lesion was demonstrably causing deterioration of the general health. He found such laxatives as agar-agar, frequent colon lavage, abdominal massage, rest from worry and overwork, and the open-air life much more valuable in the majority of cases.

A fine series of slides was then shown, illustrating bone atrophy and loss of sharp joint outlines as seen by X rays, and a number of pathological sections showing extensive small round-cell infiltration in the synovial membrane and ulceration of cartilage, particular attention being called to the obliterative changes taking place in the smaller arteries. The orthopædic surgeon's first duty, he continued, was the prevention of deformity and the avoidance of friction on

the inflamed surfaces. Manipulation could only be done with safety when the condition had become perfectly quiescent and was often useless on account of the tendency to fibrous or even bony ankylosis. Occasionally aspiration might be called for to relieve tension in the acute stage, and the operation of synovectomy offered hopes of some improvement. Arthroplasty in his hands had not given encouraging results. In some cases resection by giving a stable, painless joint was a procedure of great value. In a limited number of cases a pseudo-arthrosis might be recommended, as was done by Sir Robert Jones in the case of the hip-joint.

Passing to the subject of chronic osteo-arthritis, Dr. Osgood pointed out the importance of the bony overgrowth at the articular margins leading sometimes to locking of the joint, but rarely to true ankylosis. He also alluded to the part played by trauma, especially when the disease developed earlier in life. The treatment here was along different lines. Movement short of pain, all forms of physiotherapy stimulating increased blood-supply, removal of strain within the joint by remedying faulty body mechanics were all important. Attention to the bowels did not give the same dramatic results, sometimes seen in rheumatoid cases, but the diminution of meat, sweets, and foodstuffs liable to increase acid fermentation was found helpful. Apart from the prevention and treatment of contractures surgery had little part to play. Rarely loose bodies formed and called for removal, and occasionally arthrodesis was necessary as being the lesser evil than the pain and disability suffered. Such was specially true of the hip in younger people.

In conclusion, the lecturer made an appeal for closer and heartier coöperation between the general practitioner, the skilled "internist," and the orthopædic surgeon. The part played by personality was very prominent and the man who could win and hold the patient's confidence, he it must be who should be captain of the team.

CHARACTER CHANGE AFTER ENCEPHALITIS LETHARGICA.

IN the *Archives de Médecine Navales* for January, 1925, which is now published quarterly, Surgeon-Commander Dr. P. J. L. Charpentier reports on insanity following encephalitis lethargica, narrating as typical the case of a regulating petty officer, invalided in 1924 from the Red Sea to Toulon Hospital, in which he had been in 1922 a patient convalescent from encephalitis lethargica. After two months' creditable service on board he began to give trouble, and had been rude to, and had even threatened, his superiors. He said he knew he was doing wrong, but he could not stand his life, he could not check his words or actions. He looked healthy, neither pale nor wasted. He had a double internal strabismus, and slight inequality of the pupils, tremor of the upper lip, exaggerated reflexes, and hyperæsthesiæ. Wassermann negative in the cerebro-spinal fluid, lymphocytosis, 1 cell per c.mm., albumin 1 per cent., much sugar. The patient is no fool, he knows what is going on around him, but watches events in order to find occasions of discord. Dr. Charpentier thinks the disease attacks brains weakened by heredity, with resulting unsociability and insubordination.

EXTREME PARASITISM.

As will have been noted by our readers the Psychology of Animals Swallowed Alive was made the subject of a really amusing address at the Royal College of Surgeons of England by the President, on the occasion of the visit to the College of the Inter-State Post-Graduate Assembly of America. The reactions of the swallowed appear to be simple when they can be ascertained. They desire at all costs to get out of prison, and in effecting their escape they sometimes inflict painful death in return for projected murder.

The subject of the address has long interested mankind, and under the impetus given by the story of Jonah in the whale's belly—a story that has its counterpart surely in the annals of many early civilisations—the legends have become many. It is almost unnecessary to say that the lives of the Saints furnish arresting examples. Thus, according to the Benedictine tradition, church music was instituted when Saint Benet and his twin sister, Scholastica, were heard warbling holy psalmody in their mother's womb, and some sort of traditional respect for the Acta Sanctorum must have influenced the authorities of St. George's Hospital less than two centuries ago in their attitude towards the case of Miss Mason. This interesting lady, in 1750–51, spent many months in St. George's Hospital under the care of the most eminent physicians in town. "This girl is no impostor," says a contemporary reporter. (We condense his statement.) "She has been carefully watched. Her belly is swollen to an enormous size and whenever she is touched it emits a kind of croaking noise, audible at a distance of 20 yards. Many suppose that there is a live animal inside her." Here is a definite reference to a common belief which had its origin in a perversion of Christian teaching. It was supposed possible by many for women to become mothers by all kinds of curious sires. Indeed, among the vulgar the belief still lingers, and the sad tale of the alderman's daughter who gave birth to a litter of Newfoundland pups is still repeated, and still if the sceptic asks for details he is told that the matter was at once hushed up in high City circles. An odd case which has its bearing upon the possibility of the human body sustaining a large and highly developed parasite is that of a woman admitted into the wards of St. Bartholomew's Hospital in 1807. After giving birth to a child, she had been seized by an insatiable appetite for food. Her husband could not pay for the amount she required, but in the hospital she was supplied "with three pounds of meat daily, and with a quartern loaf and much liquor." Left without sustenance for one hour, she seems to have suffered agony, uttering shocking cries, for which she would apologise to those about her. On being operated on within a week she was relieved of an enormous creature, said to resemble a toad, which weighed eight pounds. We have here probably a case of bulimia with the details exaggerated, and the journalist who records the case, having committed himself to a theory that only a parasite could account for such hunger, rounded off the story as he would have had it.

SEX-LIMITED BOOKS.

THE anonymous author who had previously written "How to be Healthy" and "For Women Only," received, he tells us, many suggestions for a further addition to this series, and he therefore now produces a book[1] "addressed to the manhood of the nation." He deals in popular language with certain afflictions peculiar to the male sex such as varicocele, enlarged prostate, and stricture; with diseases much more common in men such as arterio-sclerosis and aneurysm; with the subject of venereal diseases, where he shows himself to be an ardent partisan of the immediate disinfection school; and finally with a curious heterogeneous set of subjects such as sleep, neurasthenia, drug habits, circumcision, sterilisation of the unfit, and advice on the treatment of oneself on the morning after a night out. On the whole the book has the accuracy which is of prime importance in books of this nature, but it is startling to find on p. 53 that "an aneurism is purely an affair for an operating surgeon . . . Once it is detected an operation becomes inevitable," without any qualifying remarks as to the site of the lesion.

MERCUROCHROME IN GONORRHŒA.

To the Editor of THE LANCET.

SIR,—As this compound, containing over 20 per cent. of mercury in a non-ionised form, is coming into use, I think it should be made clear that in a footnote to the article by Young, White, and Schwartz (*Jl. A.M.A.*, Nov. 15th, 1919, p. 1491), a grave error or misprint was perpetrated, in that a 25 per cent. solution was advocated as an injection in gonorrhœa, whilst a 2·5 per cent. solution was intended. My firm has devoted attention to the manufacture of this compound in a solid form ready for dissolving, and I have had no adverse reports of its use. In the Extra Pharmacopœia, eighteenth edition, p. 675, I have summarised statements in the current medical literature on this new remedy. The 25 per cent. solution was mentioned, but the strength seemed to me so high as to necessitate a word of warning, which, therefore, I inserted both at that page and in the preface, p. xvii. At a recent meeting at Montreal of the Inter-State Post-Graduate Assembly of America, I understand the mercurial was criticised severely, and it is possible that the strength of the solution is of paramount importance. May I ask that medical men having a copy of the Extra Pharmacopœia will be good enough to note on p. 675 that, in general, solutions should not exceed 1 or 2 per cent. strength. The misprint was pointed out by Dr. White in the *Jl. A.M.A.*, Nov. 29th, 1919, p. 1708, which I have only quite recently seen. It is there stated that the 2·5 per cent. is the strongest solution used in the urethra.

I am, Sir, yours faithfully,

W. H. MARTINDALE.

10, New Cavendish-street, London, W.,
June 9th, 1925.

X.Y.Z.—Others beside Prof. Kristine Bonnevie, of Oslo, have claimed to be able to determine a child's parentage by certain characteristics of finger-prints, but we have seen no evidence that help is to be obtained in this way. The elaborate observations of Dr. Henry Faulds were definitely negative.

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[1] For Men Only. By a Physician. London: Cecil Palmer. 1925. Pp. 119. 3s. 6d.